

UNIVERSITY OF KWAZULU-NATAL



**A CASE STUDY OF THE INSTRUCTIONAL LEADERSHIP PRACTICES OF
MATHEMATICS HEADS OF DEPARTMENT IN RURAL SECONDARY SCHOOLS**

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MAY 2019

**A CASE STUDY OF THE INSTRUCTIONAL LEADERSHIP PRACTICES OF
MATHEMATICS HEADS OF DEPARTMENT IN RURAL SECONDARY SCHOOLS**

by

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**Submitted in partial fulfilment of the Master of Education degree in the discipline
Educational Leadership, Management and Policy, School of Education, College of
Humanities, University of KwaZulu-Natal**


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DATE SUBMITTED: May 2019

DECLARATION

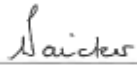
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This dissertation has been submitted with / ~~without~~ my approval

A handwritten signature in cursive script, appearing to read 'I. Naicker', is positioned above a horizontal line.

Professor. I. Naicker (Supervisor)

May 2019

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The Heads of Department of selected rural schools who participated in this study.

Lastly, I would like to thank my family for their support throughout the long journey.

DEDICATION

To my late father, Nelson Cetywayo who always inspired with reading to me and who instilled the importance of education. This study is also dedicated to my mother Mafalase Gladys Cetywayo for her encouragement and motivation to accomplish my goals.

This study is also dedicated to my husband, Khwezi Nodada, my son and my daughter, Sihle and Liyabona Nodada for their understanding and everlasting support during this academic journey.

ABSTRACT

The purpose of this study is to gain a greater understanding of the instructional leadership practices of mathematics Heads of Department in three researched schools. The study explored how mathematics Heads of Department operationalise instructional leadership of mathematics in their schools. The study further investigated the reasons why HODs use the instructional leadership practices that they are using in leading mathematics. This study used the qualitative research approach which was located in the interpretive paradigm. Furthermore, a case study design was used and it allowed for an in-depth understanding of the phenomenon being studied. Three mathematics Heads of Department from three schools at iLembe District were purposively sampled based on mathematics learners' academic performance. Semi-structured interviews were used to generate data. The theoretical frameworks underpinning this study was the Far West Lab model (1982).

The generated data was analysed. In analyzing the data, qualitative content analysis was performed following the process of transcription. The texts were coded through the categorisation of words, determination and expressions. Ultimately, categories were linked to create connotation. Findings point to the proper monitoring of teaching and learning of mathematics in rural secondary schools by the Heads of Department. The main emphasis was on the sharing of vision and goals amongst mathematics teachers regarding the teaching and learning of mathematics in their individual schools ensuring alignment with CAPS requirements. Another finding highlighted the significance of following the Department of Education policy guidelines for effectiveness in their departments. A significant conclusion that was gleaned from this study was that mathematics Heads of Departments should increase their levels of supervision and strategise their instructional leadership practices to improve learner performance. The main recommendation is that sound instructional leadership practices need to be enacted by mathematics Heads of Departments to improve learner outcomes.

LIST OF ACRONYMS AND ABBREVIATIONS

ATP	Annual Teaching Plan
AVID	Advanced Via Individual Determination
CAPS	Curriculum and Assessment Policy Statement
CSR	Comprehensive School-Wide Reform
DBE	Department of Education
DoBE	Department of Basic Education
EEA	Employment of Educators Act
HoDs	Heads of Department
IQMS	Integrated Quality Management System
KZN	KwaZulu-Natal
MBWA	Management by Walking Around
NSC	National Senior Certificate
PAM	Personnel Administration Measures
SMT	School Management Team
TIMSS	Trends in International Mathematics and Science Study

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CHAPTER ONE

ORIENTATION TO THE STUDY

1.1 Introduction

Teaching and learning at schools is an activity designed for the benefit of learners (Hord, 2008). School leaders therefore need to ensure that the school's instructional programme attains this. This study aims to explore the instructional leadership practices of Heads of Department with regard to mathematics in selected rural schools in the ILembe district of the province of KwaZulu-Natal in South Africa. The focus of this chapter is to orientate the reader to this study. I accomplish this by providing a background to the study, presenting the rationale and motivation of the study followed by the significance of the study. Further, I spell out the objectives of the study, research questions that guided the study and definition of commonly used terms in the study. Finally, I present the layout of the study, which explains what each chapter entails.

1.2 Background to the study

The South African nation annually bemoans the poor matric results. The key contributing factor to the poor results is the underperformance of many learners in the subject mathematics. Dempster and Reddy (2007) attest to this, when they reported that "South Africa has consistently been the lowest-performing country in Mathematics and Physical Science in two successive Trends in International Mathematics and Science Study (TIMSS) tests". The decline in National Senior Certificate (NSC) performance in mathematics between 1991 and 2006, as reported by the Centre for Development and Enterprise, has been blamed on poor schooling outcomes (Rasool & Botha, 2011). The underperforming schools are put on a National Strategy for Learner Attainment (NSLA) programme and are technically regarded as T65 schools. For the past three years the ILembe District has consistently come last with Mathematics results in the National Senior Certificate examination results in KwaZulu-Natal (School Report: NSC, 2016, 2017 and 2018).

The quality of the Heads of Department's instructional leadership is one of the means through which improved learner achievement can be realised. Lunenburg (2010) is of the view that instructional leaders should develop a broad plan for the improvement of learner's performance.

Tranter (2000) emphasises that the Head of a subject should lead the development and implementation of policies and practices in line with the teaching and learning policies. The HODs are curriculum managers and are entrusted with ensuring that the school curriculum is delivered effectively. However, in some rural schools, the HODs are overloaded due to low enrolment (Skinner, 2003). They fail to practice instructional leadership because they are engrossed with teaching and some are full time class managers. Skinner (2003) found that there was a 50% decrease in learners attending KwaZulu-Natal rural schools. This finding provides evidence that learner populations in rural schools in KZN are generally low. According to the Employment of Educators Act (EEA) (1998), a secondary school with 150 learners qualifies for one HOD. The Employment of Educators' Act (EEA) (No 76 of 1998) stipulates that HODs in secondary schools should spend up to 85% of the time on teaching and 15% on management duties.

Kruger (2003) asserts that the instructional leaders such as HODs should not overestimate the magnitude of the problems of inspirational focus in formulating the teaching and learning practices in schools. This view is also substantiated by Jenkins (2009) who stresses that for instructional leadership to be impressive, instructional leaders should constantly conduct meetings with their staff members. They do this for the purpose of monitoring curriculum coverage, identification and problem solving, providing feedback on all expectations and responsibilities that concern educators and learners. The above statements are substantiated by Phillips (2012) that in spite of having instructional leadership for the achievement of schools, it is rarely accomplished.

Botha (2012) is of the view that instructional leaders such as HODs should create leadership practices that are conducive to effective teaching and learning in order to enhance learner achievement. In addition, Bush, Bell and Middlewood (2010) contend that for learning to be successful, leaders should be influential to the practices that are taking place in the classroom in order to create change and improve performance. The focus of this study is to examine the instructional leadership practices used by mathematics heads of departments in rural secondary schools. The purpose of the study is to ascertain the instructional leadership practices they use as individuals.

1.3 Rationale and motivation for the study

I have been an educator for seventeen years. Mathematics is one of the subject that I have been teaching. During this period, I have seen diversity in leadership skills and management strategies distinctive to each HOD. I have observed that some of the HODs do not engage in proper coordination of curricular activities, monitoring and evaluating the educators work, conducting one on one discussions regarding the progress in the teaching and learning process. For the past six years, I have been the head of the Mathematics department. Amongst the subjects that I am coordinating is mathematics. In my experience as mathematics HOD, I realized that learners continue to perform poorly such that the pass rate is gradually decreasing in each grade.

The reason that I am passionate about this study is because of poor performance of learners in rural schools especially in Mathematics. Scholars such as Holmes, Clement and Albright (2013), Gottfried (2011), Hansen and Larusdottir (2015), Southworth (2002), Bush (2003) and Hallinger (2009) have written extensively about the subject in an international context. However, I have only managed to obtain a handful of South Africa-specific articles (Hoadley, Christie & Ward, 2009; Msila, 2013; Naicker, Chikoko & Mthiyane, 2013). These scholars spell out that: “the mounting indicators on school performance and teaching reveal largely unacknowledged poor teaching of mathematics, particularly in public schools”. The gap is that some teachers are not able to answer questions in the curriculum they are teaching. Secondly, the quality in numeracy and mathematics education in rural schools at the lower grade levels as the basis of secondary schools. This study intends to fill the gap on the monitoring of mathematics teaching competencies in selected rural secondary schools.

Given the efficacy of instructional leadership in schools, my personal observations, and the limited literature that was relevant to the South African context, as well as an increased focus on effectiveness of schools by the Department of Basic Education (School Report: Whole School Evaluation and Integrated Quality Management Systems programme, 2016) . It was significant to explore the instructional leadership practices of mathematics heads and their subsequent impact on school improvement and learner outcomes.

1.4 Significance of the study

The findings of the study might assist other HODs working in similar contexts even with other subjects. Strategies used by participants in leading and managing the curriculum could promote effectiveness of the school. The findings from the study could also inform the principals of schools on proper supervision and management of the HODs. Findings from the study could assist the departmental officials at different levels in formulating suitable workshops for Mathematics HODs. Apart from that, the findings from the study could also inform mathematics educators and learners of what is expected of them.

1.5 Objectives of the study

The aim of his study is to explore the instructional leadership practices of heads of department with regard to mathematics in rural secondary schools and seeks to achieve the following objectives:

- To explore the instructional leadership practices of HODs in mathematics.
- To investigate the reasons why those HODs use the instructional leadership practices that they are using in leading mathematics.
- To find out if the instructional leadership practices enacted by the Mathematics heads of departments in rural schools can be transformed to ensure better learner outcomes.

1.6 Key research questions

This study seeks to answer the following questions:

- What are the instructional leadership practices of heads of department with regard to mathematics in rural secondary schools?
- Why do the heads of department operationalise instructional leadership of mathematics in the way they do in rural secondary schools?
- How can the instructional leadership practices enacted by the mathematics heads of departments in rural secondary schools be transformed to ensure better learner outcomes?

1.7 Definition of terms

The definition of the terms “leadership”, “management” and instructional leadership used in this study are presented.

1.7.1 Leadership

Tibane (2014, p.35) describes leadership “as the capacity to influence others through inspiration motivated by a passion, generated by a vision, produced by a conviction, ignited by a purpose”. Leadership is “the process of influencing the behaviour of others for the accomplishment of the objectives of the organization” (Grant, 2010, p.243). Bush (2007, p.392) also defines leadership as “developing and articulating a vision for the organization”. In this study leadership is used by mathematics heads of departments in influencing teachers and learners to achieve the school’s vision of enhancing learning outcomes and school improvement.

1.7.2 Management

Management refers to the accomplishment of assigned and delegated tasks so as to achieve the desired objectives of the school (Christie, 2010, p.702). Management is more about getting processes and procedures done in an impressive manner (Bush, 2007, p.391). Schools should have specific systems in place to monitor the progress and performance of various tasks (Grant 2010, p.232). In this study management is used by the mathematics heads to monitor the teachers’ curriculum tools, learners’ work and eventually the invention and reinforcement of the situation for teachers and learners to attain their desired goals regarding the teaching and learning process.

1.7.3 Instructional leadership

The term instructional leadership was coined by Elmore (2000) to emphasise instructional practices, in order to enhance learner achievement outcomes (Rhodes & Brundrett, 2010). Instructional leadership refers to actions taken by leaders to maintain teaching and learning in school considering the challenges experienced during the process (Keefe & Jenkins, 2002). Southworth (2002) is of the same view that instructional leadership strongly promotes learning and growth to both educators and learners. In this study instructional leadership is used by mathematics heads, as instructional leaders, to direct teaching and learning, guided by the fundamentals of the education process and be informative about the curriculum in place.

1.8 Chapter outline

This research report is divided into five chapters as outlined below.

Chapter One supplies broad review and background to a set of answers to problems featured in the situation. The focus of this study, the purpose of this study, motivation and the rationale for undertaking this study are given. The significance, aims and objectives and the key research questions that guide this study are provided followed by the definition of key terms used in this study. Chapter outline brought this chapter to a close.

Chapter Two is based on the literature reviewed in consideration of the key research questions. The review begins with the details of the hypothetical instruments engaged in this study. A report on instructional leadership theory and conceptual framework that are connected to leadership practices is considered. Literature that is closely connected to instructional practices is critically reviewed. Local and international literature related to the study is presented here.

Chapter Three: The responses to the key research questions created in chapter one are provided in this chapter through the engagement of the research design and methodology. A description on the research paradigm including discussions of ontology, epistemology and methodology is provided. This is then pursued by the detailed explanation of the theory based on the methodological approach of the study. A report on methods of collecting data, sampling, techniques on data analysis, ethical issues and limitations of the study is provided.

Chapter Four provides an analysis, conclusions and details of the data created from the semi-structured interviews. The information transpired from the interviews is then considered beneath the themes and sub themes. In revealing the information, verbatim quotations were used to reveal data and ensure that the data collected from the participating Heads of Departments does not disappear. A detailed explanation of the information regarding theoretical and conceptual instruments summarised in chapter two and other related knowledge is discussed.

Chapter Five propounds the most important conclusions and recommendations. Thorough attention has been given to the information with the findings that transpired due to the aims and objectives along with the critical questions expressed in the first chapter. Suggestions are advocated in relation to the findings and conclusions that are summarised in chapter four.

1.9 Conclusion

The chapter presented an introduction, background to the study, rationale and motivation for the study, significance of the study, aims and objectives of the study were listed along with the key research questions that the study seeks to retort. Key terms were defined. I brought the chapter to a close by presenting the outline of the entire dissertation.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

In the previous chapter I explained the introduction and background to the study. It covered core issues such as the research questions, aims and objectives of the study. It also unpacked the key terms that are used in the study. The main purpose of this Chapter is two-fold. Firstly, it aims to review the literature on instructional leadership practices related to heads of departments with a focus on mathematics heads of departments. Secondly, it aims to present the theoretical framework of the study.

I present this Chapter in two sections. In Section A, I begin with the discussion of broader terms “leadership, management and instructional leadership”. Then a discussion on mathematics heads of departments as instructional leaders, management of mathematics instructional programmes and the challenges facing mathematics heads of departments follows. This is provided with the aim of exploring the instructional practices of mathematics heads of departments in various situations. Thereafter, international and national empirical studies and their implication for the current study are discussed. In section B, I present the model of instructional leadership I use as the theoretical framework for this study.

SECTION A – Review of Related Literature

2.2 Leadership

Tibane (2014, p.53) describes leadership as “getting people to look beyond their job description for ways to improve and challenge the situation”. For Spillane (2006, p.25) leadership is regarded as “a process that can be shared and dispersed across people and functions, thereby operating from the centre rather than from the top only”. Leadership refers to the “inspirational direction and influence of an individual or groups of individuals to elicit commitment, dedication and teamwork

in order to enhance teaching and learning” (Bush, 2007, p.392). Leithwood and Riehl (2003, p.3) also stress that “leadership provide some significant suggestions in the learning context namely: that leaders do not merely impose goals on followers, they work with and through others to create a shared sense of purpose and direction and that leadership is a function more than a role.” Leaders must have influence. Hales (1997) defines influence as an attempt to modify other’s behaviour through either the mobilisation of or reference to power resources. Leaders have the power to influence people and the organisation with certain values. According to Karikan (2011), leadership as influence has to be embedded in a solid value system which ultimately impacts on the degree of influence. In fact, influence is a source of power which leaders use in their organisations in order to achieve certain goals. Christie (2010) adds to the debate on this concept. For her, “leadership is characterised by influence and consent to achieving certain goals, rather than coercion and since there is an exercise of power it should entail ethical considerations” (Christie, 2010, p.702).

Additionally, Bush (2007, p.402) argues that “while leadership is seen as a process of influencing others, such influence must be informed by shared values”. This scholar further maintains that “the leader should have the capacity to communicate and articulate this vision effectively” (Bush, 2007, p.402). I agree with the recommendations that leaders need to create relations based on values. In other words they are required to reflect their own personal characteristics, principles and leadership styles in order for them to be influential (Gupton, 2003; Graf, Roberts & Gulot, 2011). Tibane (2014, p. 246) is of the view that effective leadership operates strategically in wisdom. According to him, effective leaders radically redesign their tasks for effectiveness of the organisation. This view is maintained by Liethwood, Harris and Hopkins (2008, p.635), and Fullan (2010) that effective leaders must be transformational to improve the situation (Tibane (2014, p. 247). Gorton and Alston (2012, p.12) also emphasises on the influence and impact of change.

Robinson’s (2010, p.4) research identifies the “leadership capabilities that successful leaders consistently display”. She identifies three essential types of knowledge: “knowledge in relation to the alignment of administrative processes with learning outcomes, knowledge about how to solve complex problems unique to their context and knowledge concerning effective interpersonal skills that would allow for relational trust to be built among stakeholders” (Robinson, 2010, pp.4-5). However, there are similarities with the approach of Leithwood, Harris, and Hopkins (2008, pp.29-

30) who argue that “almost all successful leaders draw on the same repertoire of basic leadership practices”. These include “building a shared vision and setting directions, understanding and developing people, redesigning the organisation where necessary and managing the teaching and learning programme” (Leithwood, Harris, and Hopkins (2008, pp.31-32; Robinson, 2010, p.5) .

Grant (2010, p.243) holds the view that “leadership is a practice which creates environment for change”. The scholar continues to say that leadership is about “tapping into the potential of all people in the organisation and using these effectively in a trajectory of relating, learning, leading and growing.” Based on the definitions provided by different scholars regarding leadership, this study concurs with Sergiovanni (2006, p.6) that “leadership is the ability to implement change, exercise influence, establish direction, motivate and inspire, to have confidence and vision, aligning people, effective communication, team building, being accountable, shared decision making and to display a high degree of integrity” (Fullan, 2001; Bass, 2008; Yukl, 2010; Gorton & Alston, 2012; Preedy, Bennet & Wise, 2012). Similarly, Fullan (2002) asserts, that effective leadership has a role to ensure that capacity increases in schools in order to improve results.

2.3 Management

This study acknowledges the fact that the Heads of Department are required to accomplish all the practices regarding leadership and management in the school. According to the Draft Policy Framework: Education Leadership and Management Development (2006, p.16), “good leadership and management should influence all the aspects of an educational institution which in turn could have a positive impact in creating a favourable atmosphere for successful learning and teaching”. Management is subsumed in leadership hence Bush (2007) states that management is viewed as a sub-discipline within leadership. I therefore assume that the mathematics HODs are leading and managing the subject. Management is about “getting systems to operate effectively, look inward and to the present” (Clarke, 2007, p.12).

According to the Department of Education (2015), the Head of Department is the first level of management and as such has to guide educators in his or her department. The HOD must therefore be conversant with the Curriculum Management Manual as well as a learning area or subjects s/he manages to ensure that all requirements and procedures are carried out. On the basis of this study,

the HODs are expected to provide ongoing capacity building programmes based on the curriculum needs of mathematics. Spillane, Halverson and Diamond (2004, pp10-11) posit that “management maintains order, consistency, profits, routine direction and quality in organisations” (Chikoko, Naicker & Mthiyane, 2015, p.3). These scholars support that management is based on achieving a set of goals.

Management is essential in a school “to improve the school performance, school effectiveness, school efficiency and school relevance” (Thurlow, 2003, p.33). This is substantiated by Fullan (1991, pp. 157 - 158) that management is about designing and planning, organizing, controlling, executing, deploying and working effectively with people. I concur with that since the learner is managing his or her books, the teacher managing the class, the HODs are managing curriculum then the deputy and the principal are managing the school as a whole. Bush (2008) argues that if the school is not managed properly there is always a failure, hence this study is focusing on the instructional leadership practices of mathematical heads of departments. The scholar states that there should be a clear link between purpose and management. Managers should be able to identify the causes of decline in learner performance (Bush, 2008).

2.4 Instructional leadership

The main focus of instructional leadership is on leadership of teaching and learning. Seobi and Wood (2016, p.2) define instructional leadership as “an approach to direct teaching and learning aspects of school leadership”. “The common understanding of instructional leadership among educationists focuses on the following characteristics: leadership influencing the quality of education in schools, enhancing learner achievement, managing resources to effectively improve teaching and learning, pedagogic and curriculum management” (Mestry & Pillay, 2013, p.2; Naicker, Chikoko, & Mthiyane, 2013, p.6).

Instructional leadership refers to the role of the leaders in providing directions, resources and supports to the teachers and learners in order to improve the teaching and learning (Keefe & Jenkins, 2002). Budhal (2000, p.4) is of the same view that instructional leadership is “the process by which leaders in effective schools immerse themselves in the actual teaching and learning programmes of the school”. This is done for the purpose of recognising the challenges encountered

by teachers and learners within the school. The definitions are substantiated by Mestry (2017, p. 261) the view that instructional leadership is the “premeditated process to improve the quality of teaching and learning in schools”. This scholar cautions that “although instructional leadership is an important element of the school’s central activities, it should not underestimate other aspects of school life” (Mestry, 2017, p. 263). According to him “the attention of the instructional leader is to control, coordinate and supervise all teaching and learning activities” Seobi & Wood, 2016, p.4). I accede with this perspective since the mathematics HODs are supposed to set their records straight in uplifting the standard of mathematics and lead by example.

Through effective instructional leadership practices, the school becomes an effective school. Bush, Bell and Middlewood (2010) contend that leaders need to influence classroom practices if they are to make a difference to learners’ learning. The role of instructional leaders is to help to sustain the emphasis on why learning is happening hence the existence of the school is to offer eminence education to learners, the effectiveness of the school is gauged by the learners’ achievement. Southworth (2002, p.3) argues that “instructional leadership is not only focusing on improving teaching and learning but also stresses on professional development of teachers and learner success”. Botha (2004, p. 242) state that “instructional leaders are expected to set clear objectives, maintaining discipline and enforcing high standards, with the intention of improving teaching and learning at school.”

Leithwood (2016, p. 127) stresses on effective department-head leadership practices with emphasis on the main tasks namely: “setting directions, identifying short-term goals, creating high performance expectation, communicating the organisation’s vision and goals, stimulates professional growth and modelling values and practices” (Leithwood (2016, p. 128). Bush (2007, pp. 400-401) maintains that “school leaders need to understand that it is their responsibility to improve conditions for developing effective learning in their schools”. The above statements are supported by Wisneski, Ozogul and Bichelmeyer (2014, p. 19) that “despite instructional leadership being effective for the success of schools, it is seldom practiced”. A survey conducted by Holmes, Clement and Albright (2013) about learners’ attitudes towards mathematics through lesson observations and discussions with mathematics teachers, revealed that a large number of learners know that Mathematics is important and that it is crucial for them to perform well in it. Mathematics staff in that school had a different perception and the mathematics head of department

has never been involved in the matter to analyse the situation. Therefore the situation proved that the mathematics head of department did not practice the role of being an instructional leader. These findings are substantiated by Mitchell and Castle (2005) that the focus should not be whether a school leader is doing instructional leadership correctly, effectively, or efficiently, but rather, how aware the leader is of what s/he is doing as an instructional leader. Mestry (2017, p. 264) asserts that “an instructional leader needs to understand the basics of quality teaching and possess ample knowledge of the curriculum”.

2.5 Heads of Departments as instructional leaders

Katterfeld (2011) stresses that the main priority of effective instructional leaders is on instruction, creating a conducive academic atmosphere in ensuring the achievement of the school’s vision. This view is supported by Trail (2000) that instructional leaders should perform coordinating and facilitating activities for accomplishing the goals of the school. It is crucial that mathematics head of department has an in-depth knowledge of the subject to ensure the smooth coordination of the subject (Department of Education, 2005). The mathematics heads of departments plays a prominent role as an expert consultant in ensuring that the subject is taught according to the curriculum requirements and standard (Bambi, 2012). Instructional leaders should incline themselves to practices that inspire educators to deliver the curriculum as expected (Sim, 2011).

Mestry and Pillay (2013, p.1) contend that “the role of the heads of department is critical in instructional leadership”. They further emphasise that departmental heads are the second individuals to account on the subject results following the subject teacher. Leithwood (2016, p. 131) shares the same opinion that “heads of departments are the subject specialists and catalysts in the school context”. Their main task as instructional leaders is “to ensure that teaching and learning is taking place effectively” (Du Plessis & Eberlein, 2018, p.5). This view is supported by Hoardly, Christie and Ward (2009) that effective instructional leaders should possess the leadership and managerial skills for the effectiveness of the school.

Sim’s (2011) perspective on instructional leadership is that they should guide teachers on curriculum delivery, ensuring accomplishment of the expectations of the curriculum. The mathematics heads of departments do this through supervision, monitoring teachers and learner’s

work, and hold meetings fourth nightly excluding briefings. The Department of Education (2014) suggested that each subject should have a subject head. Subject heads should conduct subject meetings and report to the departmental heads even if the departmental head is also teaching the subject. According to the Department of Education (DoE) HODs Manual on Leading Curriculum (2015) subject structures and committees provide support to individual educators. Therefore, HODs should facilitate the establishment of such committees at school level.

A study conducted by White (2000) in Australia found that HODs are regarded as the primary instructional leaders in their departments (Seobi & Wood, 2016, p.4) and have a role of formulating a departmental culture (Day, 1984, p. 30). According to White (2000), HODs are both classroom and administration workers. This dual role is regarded by Briggs (2005) as a liaison role as the HODs serve the linking role between the educators and the seniors. White (2000) argues that this role requires a considerable skill.

Briggs (2005) acknowledges the nature of the tasks of HODs' within complex and changing situations and further recognises five traits of this role. Firstly, as "a corporate agent", the HOD contributes to the formulation and implementation of different strategies in the school. Secondly, as an implementer performing the curriculum and departmental functions. During the implementation, the HOD is also expected to manage the resources, namely human and physical. Thirdly, the management role of organising, observing and assessing teachers' work. The fourth role focuses on the link between the members of the department and the senior management which is regarded as liaison role (Briggs, 2005). The fifth role, which is the last role identified by Briggs (2005) is leadership. The leadership role acknowledged by Briggs (2005) focuses mainly on "the HOD as an instructor".

2.5.1 Managing curriculum and instruction

According to the Employment of Educators Act (No.76 of 1998), (Terms and Conditions of Employment of Educators) as well as Section 4 of the Personnel measures (PAM) document, contained in the Education Law and Policy Handbook (1999), and also in the Policy Handbook for Educators (2003), implementation and management of curriculum are core duties of the heads of departments in schools. The mathematics head of department as an instructional leader has to furnish the educators and learners with guidance, resources, support and influences for excellence in their performance. The head of department remains responsible for conducting and managing

the instructional programmes in schools. This is maintained by Bush and Glover (2003) that the core duties of the HODs is “to instruct the process of teaching and learning” (Day, 1984, p. 32).

One of the crucial role for the HODs is being an instructional leader (Hoy & Hoy, 2003). The author continues to say that successful instruction could be promoted through the involvement of principals by creating a school climate that is conducive for instructional purposes. Instructional matters should emerge freely from the school leaders and teachers (Hoy & Hoy, 2003). This means that instructional leaders need to “ensure that teaching and learning is taking place effectively” (Leithwood, 2016, p.126) at all levels. The Department of Education (DoE) HODs Manual on Leading Curriculum (2015) states that HODs are liable for the transformation of the practices of the existing curriculum. Both Hoy and Hoy (2003) and the DoE Manual on Leading Curriculum (2015) agree that this crucial role is shared amongst the principals, HODs and teachers. It is also the duty of the departmental heads to develop policies for their departments. The Department of Education (DoE) HODs Manual on Leading Curriculum (2015) summarises the roles of HODs as follows:

- Ensure curriculum implementation in the school
- Assist in the development of classroom learning activities including educational excursions.
- Monitor and evaluate informal and formal assessment tasks.
- Ensuring effectiveness throughout the process of teaching and learning.
- Ensure that the method used in the classroom is not lecture but learner centered.
- Encourage teamwork amongst teachers.
- Develop departmental policies and manage all the activities.

Mathematics Heads of Department are leaders of learning who provide instructions and directions on instruction for the success of the process of teaching and learning. Bush and Glover (2003, p.11) argue that “leaders need to provide instruction in order to influence teaching and learning”. Ezzaki (2007) supports the view that leaders of instruction for learning should influence teachers by promoting a positive change. It creates a common understanding and encourages people to work towards the achievement of the objectives of the school. Seobi and Wood (2016, p.4) also mention that there are “programmes and actions in place that are implemented to improve learner achievement”. These programmes “prioritise quality teaching and learning as the heart of the

education plan” (Seobi & Wood, 2016, p.4). In this study, “quality is viewed as the internal factors driving the performance of the school” (Chikoko, Naicker & Mthiyane (2015, p.5). For example, the issue of poor learner performance in Mathematics. The study is about the practices used by mathematics heads of departments. It is significant for the mathematics heads of departments to apply different skills to improve learner performance. O’Donoghue and Clarke’s (2010) principles that leaders should direct instruction through the promotion of dialogue as good listeners. They should enquire, reflect and evaluate the instruction. I strongly agree that these principles could guide mathematics heads of department in leading the subject in a manner that could change the situation.

A study conducted by Glatthorn, Boschee and Whitehead (2011, p.73) suggest that “curriculum and instruction are at the heart of any school-improvement plan”. Mathematics heads of departments are required to work with teachers to lead and manage the subject through co-ordination and supervision in all the grades that are doing the subject. Their supervision should confirm that there is proper alliance within the school curriculum and the policy guidelines. A curriculum that is well controlled and managed promotes the required skills and improve learner achievement. Glatthorn et al. (2011) also suggest that the heads of departments should be alert and well informed of the curriculum changes to enhance their supervision. The implementation of the new instruction should be initiated by them together with the subject heads and judge its suitability for improvement. Instruction should be directed by communication and is one of the crucial factors to be utilised by the leaders of instruction (Hallinger, 2000).

2.5.2 Identification of monitoring needs and learner progress

Bush and Glover (2012) conceptualise monitoring as continuous procedure performed to initiate a follow-up on the implementation of teaching and learning. Henard and Roseveare (2012) acknowledges three important needs of monitoring of the instructional programme by leaders at schools for the promotion of quality teaching and learning. These needs include the school level, programme level and individual level endeavours. Firstly, at school level the quality assurance is guided by policies. Policies guide the leaders of the programme of instruction to the effectiveness of the planned tasks and the success of the strategies planned (Lock, Qin & Brause, 2007).

Secondly, the programme level focuses on the curriculum delivery and classroom monitoring. The Department of Basic Education (DBE) (2011) suggested that teacher’s annual teaching plans, daily

lesson preparations and their curriculum coverage should be well monitored by the heads of departments. Thirdly, the school leaders should encourage individual teachers to be creative in advancing the process of teaching and learning. This individual level approach also enhances learner performance. “Support for quality instruction (teaching) enhances learning” (Morris, 2014, p.32) and as a consequence, promotes learner performance. The DBE (2015) provided different monitoring tools to be followed by the school leaders when controlling the work, particularly for the heads of departments. The DBE (2018) provided amended documents of monitoring mathematics in the Further Education and Training Band (FET) grade 10 to 12. The focus of the monitoring tools is on how teachers should apply strategies used in mathematics for learner improvement as well as the accomplishment of the teaching plan. According to Kruger and Badenhorst (1996) monitoring academic progress requires a significant role of leaders. In other words, the achievement of learner performance is accomplished through proper and effective school monitoring systems (Mbatha, 2004). Successful monitoring instruction should involve class visits, lesson observation, supervising teachers’ work and evaluating learners’ tasks as well as providing feedback (Bush, Joubert, Kiggundu, & Van Rooyen, 2010). Bhengu and Gounder (2014) are of the view that the implementation of effective curriculum monitoring creates success for the school.

2.6 Challenges and obstacles facing Heads of Departments

During the implementation of Curriculum Assessment and Policy Statement (CAPS), the Department of Education (2012) advised educators that there will be less paperwork. Contrary to that, paperwork continued to be a challenge in the process of teaching and learning. Moderation of learners and educators’ evidence has a lot of moderation tools to be filled with complicated analysis sheets and performance trackers. This challenge exist even in the category of supervision. The Department of Education (2016) provided schools with numerous monitoring tools, namely: Control mechanism for teacher lesson preparation, for learner’s written work, for teacher ATP, for tracking curriculum coverage. Mead (2011, p.5) identifies some of the “challenges experienced by school leaders, namely: curriculum changes, monitoring and supervisory duties”.

The programmes which are designed for instructional leaders and teachers particularly mathematics are not sufficient to enhance their pedagogic skills (Darling, Hammond, Wei, Andree,

Richardson & Orphanos, 2009). These scholars continue to say that the majority of these programmes do not cater for classroom practices. Teachers are having challenges in completing the Annual Teaching Plan (ATP) on time and that has a negative bearing on learner performance (Rulinda, Role & Makewa, 2013). However, mathematics heads of departments remain accountable for their incomplete work. The Department of Education (2011) intervened for the purpose of promoting curriculum coverage through the provision of quarterly tests in mathematics from Grade 10 to Grade 12. These monthly and quarterly tests ensure that the work allocated in the ATP to be taught each term is covered. Therefore, teachers work under pressure to cover the scope and experience challenges as the monthly/topic tests arrive earlier, sometimes even before they finish the topic.

Conflicts of interests, behavioural differences and negative influences in the school is a challenge to the school leaders and has a direct destructive negative impact on the learning outcomes (Le Blanc & Shelton, 2012). Firstly, I have observed different schools with conflicts of interests among staff comprising divisions performing poorly. This proves the fact that “instructional leadership is about influencing others” (Mestry, 2017, p.261) in some cases can ruin the school. Secondly, schools with low enrolment especially in deep rural areas, the head of department will have a challenge of doing all the administrative, supervisory, monitoring work whilst allocated a form class. This statement is supported by a study conducted by Skinner (2003) who discovered that there was a 50% decrease in learners attending KwaZulu-Natal rural schools.

Lack of interest in learners towards the subject (Mathematics) lowers the morale of educators. Gottfried’s (2011) view about learners’ attitude towards mathematics vary with their knowledge of the significance of the subject. Jones, Morgan and Harris (2012) suggest that school leaders should promote collaboration through team teaching and networking. Instructional leaders should encourage proper communication and create mutual understanding to promote collaboration to all who are involved in Mathematics. Buchem (2002) argues that there should be transparency among leaders of instruction and the educators involved. The scholar continues to say that their mutual relationship could promote effectiveness of the department and the school as a whole. Challenges faced by the educators should be tackled and remedial actions taken to avoid more problems.

2.7 International context

2.7.1 Some international studies on instructional leadership

Southworth's (2002) qualitative study examined the notion of instructional leadership at primary schools in Britain. This authoritative research advocates three major strategies to augment the efficacy of teaching and learning. Firstly, modelling is about the power of example. Southworth (2002) holds the view that HODs and teachers are always 'on show'. This means that HODs should use their pedagogical practices as a template for others to follow, work in close proximity with teachers in the classroom, coach staff, and use assemblies to promote core values and practices (Southworth, 2002). In other words, school leaders provide the performance standards for other stakeholders to emulate. In the final analysis, school leaders are basically interested in creating exemplary institutions with an emphasis on providing quality instruction.

The second strategy that Southworth (2002) articulates is monitoring. This involves HODs looking at the teachers' weekly plans, visiting classrooms, inspecting learners' work, observing lessons, implementing school policies and analysing the test results of the school (Southworth, 2002). The school leaders also provides constructive feedback on various pedagogical issues. Thirdly, communication in the form of professional dialogue with educators promotes mutual understanding amongst colleagues and the management of the school. However, professional dialogue is propagated through the development of curricular programmes, evaluating learners' written work (Southworth, 2002).

A study was conducted by Klar and Brewer (2013, pp.2-3) to examine the instructional leadership and management practices used by school leaders in three poor-performing schools in order to improve teaching and learning. Since the schools were located in poor communities, the school leaders also contemplated on some contextual factors and social related problems. Comprehensive School-Wide Reform (CSR) is a conceptual framework underpinning the study. Its emphasis is on the improvement of learner performance scores. CSR is not limited to instructional leadership but considers the whole school. Klar and Brewer (2013, p.4) highlight our "main leadership practices that are important in the CSR, namely: planning, development of staff, reshaping the organisation and supervise the programme of instruction".

The empirical findings were discussed on the basis of four important leadership practices. Planning was the first aspect that was discussed. School leaders need to plan towards a common goal. At Chris Bear Competency School, a programme known as Advanced Via Individual Determination (AVID) was adopted for learner improvement. The school also created a conducive atmosphere for the environment. At Prosperity School, school leaders established the Literacy Across the Curriculum (LAC) for the improvement of literacy. The school gained new developments and the functionality of the school changed for the better. The school leaders at Abundance School created strong relations with the stakeholders of the school and learners through the application of different strategies, namely: parents' day, learners' day, teachers' day, awards day and visiting learners' families.

Klar and Brewer (2013) argue that when leaders of schools set guidelines, it is significant that they consider the aspects of instructional leadership. The second leadership practice is about development of staff. Professional development was provided for educators of all the schools with the purpose of accomplishing goals of the school. The School Based Support Team (SBST) of Chris Bear Competency School conducted developmental workshops for all the teachers of the school fortnightly. Furthermore, the SBST promoted good working ethics in the school. Likewise, the leadership of Abundance Technical School conducted some sessions on staff development.

Thirdly, redesigning the organisation is another instructional leadership practice. The school leaders created changes at school considering the needs of the community. School culture was practiced at Abundance Technical School with regular meetings on methods of instruction. Furthermore, the school leaders of Chris Bear Competency School encouraged collegiality among the teachers of the school. In this study, the school leaders redesigned their schools in consideration of the CSR programme. Robinson, Lloyd and Rowe (2008, p.662) recommend that "vision, mission and objectives of the organisation should be promoted by redesigning the organisation". Managing the instructional programme is the fourth leadership practice. This comprised: recruitment, monitoring and motivation. The school leaders at Chris Bear Competency School recruited suitable staff to promote the progress of learners. They also ensure the availability of Learner Teacher Support Material (LTSM).

Grissom, Loeb and Master's (2013) empirical study examine how instructional leadership practices of the school leaders impact on learner achievement outcomes and school improvement.

The researchers identified some important instructional leadership practices such as classroom observations, teacher development and the improvement of instructional programme (Hallinger & Murphy, 1985). The research is based on the concept of Management by Walking Around (MBWA) (Grissom, et al., 2013). According to the proponents of the MBWA model, it promotes curriculum practices, encourages discipline and creates a conducive atmosphere of teaching and learning (Downey, Steffy, English, Frase and Poston 2004, pp.20-27).

The study conducted by Grissom, *et al.* (2013) is a quantitative study within the positivist paradigm. Hence, a quantitative approach was used to evoke data. It was a longitudinal study of schools, school leaders and learners from 2008 to 2012. 85 schools were identified using stratified random sampling in the United States of America. The research methods such as observations, documents review, interviews and surveys were used. Grissom, *et al.* (2013) in their study used observations to shadow school leaders for the whole day during 2008, 2011 and 2012. The information was recorded guided by strict procedures and protocols. One-on-one discussions were conducted following guidelines (Grissom, *et al.*, 2013). Academic information was evaluated by the researchers using learners' portfolio files. Interviews and surveys were conducted for the triangulation of data (Grissom, *et al.*, 2013).

Instructional leadership practices encourages better performance on learners' outcomes (Grissom, *et al.* 2013). Instructional time was considered in the findings. According to Grissom, *et al.* (2013), the approximate time to be used by school leaders on curriculum instruction activities is 12, 8 %. About 5, 5% of this time was for MBWA, 0.3 % for developmental purposes and 2.1% was for them. (Grissom, *et al.*, 2013) posit on the significance of MBWA as the key factor regarding the instructional practices applied by teachers in their classrooms.

The first finding on MBWA reflected that the school leaders brought a negative impact on the learners' results when they spent a lot of time on MBWA. The most important finding was that principals who spent more time on MBWA had a negative impact on learner achievement outcomes. Grissom, *et al.* (2013) note that a 1% time of walking around brought a 0,11% decrease in Mathematics results in 2007-2008, a 0,25% decline in 2010 and a 0,22% decrease in Mathematics results in 2011-2012. The statistics in reading reflected the same situation. This finding is substantiated by Horng and Loeb's (2010) conclusion that school improvement does not rely on instructional leadership practices. The second finding was about the positive results

reflected when school leaders coach and develop educators. (Grissom, *et al.*, 2013) noted that 0, 01% increase on teacher development resulted in the improvement of mathematics performance by 1%.

2.7.2 *Some international studies on Mathematics*

A study on the decline of a number of incoming and persevering students in mathematics in the USA was conducted by Gottfried (2016) for the new stratagems to employ students in improving mathematics performance. The main purpose was to align the instruction of mathematics with real-world applications ensuring that it focuses on real-life situations as required by K-12 curriculum. This experimental study examined whether student performance in mathematics can be influenced by real-life mathematics instruction. Students reflected remarkable capability towards the implementation of K-12 curriculum. However, the learning of mathematics in the K-12 curriculum was of great concern considering the future outcomes.

According to Gottfried (2016), during the K-12 schooling years USA students were identified to be backward with regard to mathematics international counterparts K-12 (National Science Board, 2010). The diagnosis of backwardness amongst students in mathematics led to the significance of the conduction of appropriate instruction of mathematics. The focal point is rational as instruction is based on the fundamentals of the K-12 curriculum ensuring procedural supplement on the educational pathway. However, mathematics achievement was directly linked with the success of the implementation of K-12 curriculum those years. Hence, Obama Administration and US Department of Education in USA elected for content and instruction mathematics in the previous era.

The study adopted the perspective of saying that Real Life-Mathematics Instruction (RLMI) leads to an improved understanding of mathematics hence its purpose is to “facilitate an understanding of mathematics rather than a symmetrical relationship in which the real world becomes more understood” (Gottfried, 2016, p.314). It is through RLMI that students had an encounter in learning mathematics conceptually and in real-life applications. Based on the questions provided, it was discovered that teachers are capable of applying their instructional practices in mathematics in manifold areas. Procedurally, the effect of RLMI on the outcomes of mathematics was undervalued particularly in the baseline model. A comprehensive investigation was conducted. The results of

the study showed “a correlation between mathematics achievement and RLMI frequencies” (Gottfried, 2016, p.318).

The outcomes of Mathematics were assessed and presented as means, standard deviations and autonomous covariates. The significant conclusion focused on the assessment of mathematics progression ‘spring wave mathematics assessment, an item-response theory (IRT) scale score’. (Gottfried, 2016, p.321). Mathematics assessment tested numerous skills namely: problem solving skills, conceptual knowledge skills and procedural knowledge skills. “The assessment comprised different questions namely: properties and operations; measurement; geometry and spatial sense; data analysis, statistics and probability; and patterns, algebra and functions” (Gottfried, 2016, p.322). Additionally, this study observed percentile assessment score on the spring wave mathematics assessment. Hence, the reduction wave mathematics assessment was regarded as an independent covariate.

The findings reflected that the observations of the researcher might not reveal the ability of teachers with greater frequency of RLMI. There is also a hypothesis that the capabilities and qualities of teachers with a great frequency of RLMI will be different. A concluding analysis examined if RLMI had effects on mathematics achievement except spring mathematics outcomes. It was highlighted that the purpose of doing spring mathematics outcomes was based on ensuring that the disregarded teachers’ characteristics does not affect the results of the study. The RLMI indicators has also shown outcomes on “reading achievement, reading percentile and approaches to learning each of which were measured in the spring of kindergarten at the same time that the mathematics outcomes were measured” (Gottfried, 2016, p.338).

Sexton and Downton (2014) conducted a research on Contemporary Teaching and Learning of Mathematics (CTLTM). CTLTM which was a project which occurred for five years from 2008 to 2012. It aimed to improve mathematics teaching and learning practices in participating schools. Four intakes of schools participated in the project for a two-year period. These sessions were designed to “enhance teachers’ mathematical knowledge for teaching (Seobi & Wood, 2016, pp.4-5) which is a specialised merger of subject matter knowledge and pedagogical content knowledge related to mathematics teaching and learning with their involvement in CTLTM” (Sexton & Downton, 2014, p.3). Each school was participating with one member of the staff representing the leadership role of the school in mathematics, School Mathematics Leader (SML). The main duties

of this leader involves the supervision of instructional practices enacted by mathematics teachers in the teaching and learning of mathematics at school. The majority of these mathematics leaders were experiencing leadership duties for the first time. However, they performed good practices towards the application CTLM requirements in their schools.

Sexton and Downton (2014) discovered that leaders have little information about their leadership role in the mathematics curriculum. They took an opportunity to research about it in 2012. They collected the information from 25 School Mathematics Leader (SML) but 23 of those schools participated in the final year of CTLM project. In November 2012 data was collected through an open-ended written investigation. The responses were collated and then categorised into themes and sub-themes.

The first findings reflected the willingness of SMLs to raise the profile of mathematics as an important curriculum area, keeping mathematics on the school improvement agenda, and developing positive attitudes towards mathematics. The second findings showed that the majority of the SMLs saw their part in multi-faceted ways. These findings also indicate that “the SMLs viewed their role as one concerned with the facilitation of professional learning for the classroom teachers in their schools” (Sexton & Downton, 2014, p.5). The CTLM project suggest that the SMLs should play their role in leading mathematics learning.

2.8 African context

2.8.1 Some African studies on instructional leadership

A number of studies on instructional leadership conducted by different researchers reflect different findings. Smith, Mestry and Bambie (2013) conducted an investigation on the role of instructional leaders and their experiences as leaders in schools. The study focused on the HODs in general. In this investigation the HODs are recognised as the curriculum managers. They work collaboratively with teachers in preparing lessons. Secondly, the findings reflected that some HODs are incompetent and fail to comply with the curriculum changes. The findings of the study also showed that some HODs fail to grip educators accountable for the classroom activities. Another finding showed that teachers do not respond positively towards class visits by the HODs, they believed that the class observations are not for developmental purposes. Recommendations were made for

the replacement. Their fifth finding revealed that Integrated Quality Management Systems (IQMS) did not cater a specific role on instruction. Some teachers believed that there is lack of justice and their experiences are not considered. The sixth finding was that HODs show inability to play their supervisory role and lack the skills required for leading. Lastly, the researcher discovered that HODs were overloaded and were not supported by the department of education.

In the same study, as part of their accountability it was evident that the HODs do not have a constructed guide for the development of educators. Some HODs conducted teacher development informally by utilising an opportunity arising during class visits, one on one discussions, subject and departmental meetings. The evidence provided by HODs reflected that there is no time for the development of teachers because they are overloaded. In my study, I sought to investigate instructional leadership practices of mathematics Heads of Department in the curriculum delivery of the subject. HODs are leaders in the teaching and learning process which are mandated to perform as expected in leading the curriculum process. The study conducted by Smith et al. (2013) showed that HODs did not perform well due to the challenges they were facing. Some of the challenges include the changes in the policies by the Department of Education. Mestry and Pillay (2013) also state that curriculum management improves the standard of teaching and learning through proper instructional leadership. Naicker et al. (2013) are of the same view that proper instructional leadership influences educators and motivates them to bring changes in their practices. In this study mathematics HODs should encourage teachers and promote collegiality among mathematics teachers for the improvement of learner achievement.

The studies conducted by Mestry et al. (2013), Naicker et al. (2013), Bhengu and Mkhize (2014), corroborate the idea that principals of schools should utilise HODs in the monitoring of the curriculum. In South Africa, particularly in secondary schools, the HODs in their special subject fields should communicate the vision of the school in their departments. HODs should develop management strategies for the delivery of the curriculum, providing guidance and support in promoting the vision and the mission of the school. The duty of the HODs was to support the teachers, equipping them with the required resources and materials.

Bambi (2012) argues that the improvement of schools is based on the duties performed by the instructional role of HODs. The restructuring of education brought by democracy empowered all teachers in schools to apply their leadership roles. However, HODs are entitled to work with the

principals in monitoring and managing curriculum. The main responsibility of HODs is to supervise the teaching and learning process with influence. They should “ensure effective process of teaching and learning is taking place in a suitable environment” (Du Plessis & Eberlein, 2018, p.4). This study is related to my research since it considers the legislation on the improvement of the process of teaching and learning whereas in my study the policies regarding supervision and monitoring of mathematics by mathematics heads of department are considered.

Another study conducted by Naicker et al. (2013) focuses on the exploration of management of the process of teaching and learning by school principals. Their findings reveal the significance to emphasise on the improvement of quality in the process of teaching and learning. The improvement requires quality educators and learners for the achievement of learner performance. The last finding indicates how the participating schools ensure the individual accountability in the process of teaching and learning. This study reflects that the improvement of the teaching and learning process is achieved by successful schools through dedicated instructional leadership. Instructional leadership improves learning through the promotion and support by all the members of the school. Through the encouragement of teachers by the principal, teamwork and success is brought to the school.

In my study, the mathematics heads of department encourage the educators, motivate them, conduct developmental sessions, promote team teaching and solve problems and challenges. The principal cannot solely manage the process of teaching and learning. When lesson preparations are done in collegiality, some classroom challenges are addressed. “The principal alone cannot manage teaching and learning, they need help from other SMT members, like HODs as their subject specialists in high schools” (Mestry & Pillay, 2013, p. S2; Mestry, 2017, p. 258) endorse the view that “the principal cannot solely manage the process of teaching and learning but requires the assistance of the Heads of department as subject specialists to lead learning”.

2.8.2 Some African studies on Mathematics

Professor Simkins (2013) reported that the “teaching of mathematics in South African schools is amongst the worst in the world” (Simkins, 2013, p.3). Trends in International Mathematics and Science Study (TIMSS) reflected on the poor performance (Katterfeld, 2011, p. 41) of learners in mathematics in 2011.

It has been reported that recently there are numerous extra classes conducted for Mathematics to uplift the standard of performance amongst learners in mathematics. It was discovered that the main cause lies with “poor instruction” with regard to teaching and learning of Mathematics (Simkins, 2013, P.3). An increase in mathematics private tuition was also identified as a result of poor mathematics instruction in and public and rural schools (Du Plessis, 2014, p.1114). Simkins (2013, P.3) is of the view that the “challenges and deficiencies encountered in mathematics can only be resolved through learners’ dedication, willingness to change the situation and teachers’ competencies”.

He reported on the developments to be done for the purpose of improvement. However, Simkins’s (2013, p.5) report regarding TIMSS reflected that there is no other country that performed poorly like South Africa. A detailed report reflected that “an average South African learner in grade 9 is behind with almost two years of learning with grade 8 learners of other 21 countries” (Simkins’s (2013, p.5). According to Simkins’s (2013, p.5), analysis, this performance tallies with the high rate of school drop-outs experiences at grade 10 leading to a limited number matriculating. The poor performance has a direct impact on the National Senior Certificate (NSC) pass rate in mathematics particularly in recent years. Simkins’s (2013) report acknowledges that the pass rate of learners is decreasing each year and that shows that the level of education is also decreasing, particularly in South Africa. This report is also corroborated by the DBE (2016) instruction on progression of underperforming learners and the modularisation process.

2.9 Rural secondary schools

According to the Department of Basic Education’s Rural Education Policy (Republic of South Africa, 2017, p.6), rural areas are “farms and traditional areas characterised by low population density, low levels of economic activities and low levels of infrastructure.” The policy further defines secondary school as “a school that offers all or a selection of grades from Grade 8 to Grade 12.” Du Plessis (2014, p.1110) holds that social, economic, educational and cultural factors need to be considered in enhancing the definition of rural education. There are features that are used to profile rural schools as stipulated in the policy on Rural Education by Department of Basic Education (p.6).

Rural secondary schools are located in farms and places under traditional tribal authority distant from urban and peri-urban areas. These places are “characterised by low economic activities, transport, access to technological developments and are geographically isolated, among others” (Republic of South Africa, 2017, p.6). The schools have Grades 8 to 12 teaching and learning programmes. Rural schools have high needs of resources including teachers (low teacher retention) and infrastructure (Du Plessis, 2014, p.1112).

2.9.1 Rurality and mathematics teaching and learning

The teaching of mathematics requires creative approach on the side of a teacher. The learning of Mathematics by learners is best achieved when the resources are available. As indicated in the definition of rural school that resources are not available but are highly needed for quality learning and teaching. The following factors are worth noting in respect of Mathematics teaching and learning in rural areas: “geographic location of rural school, problems of poverty, infrastructure, technology and teacher retention” (Du Plessis, 2014, p.1113).

2.9.1.1 Geographic location of rural school

Rural schools are located far away from cities. This factor makes rural schools uninviting to teachers especially mathematics teachers. Geographic location of rural schools deprive teachers of mathematics opportunities to improve their content knowledge and qualifications upgrade. This is particularly associated with low and poor infrastructure in rural areas. The infrastructure in this regard include transport to places of professional development, technology which is primitive or non-existent among others. A consequence, teacher moral is very low. This affects the quality of the teaching of Mathematics.

2.9.1.2 Problems of poverty

Du Plessis (2014, p.1114) identifies “poverty related factors such as low educational levels of parents, abuse and neglect, unemployment among others”. These have a direct impact on a child’s performance at school. Learning of mathematics in most rural schools is allocated morning

periods. It is assumed that learners are fresh from homes and have energy to focus and assimilate the instructions from teachers. Such assumptions are misplaced because most rural learners do not have access to adequate feeding. Rural schools also fail to meet the nutritional needs of the learners in spite of the feeding scheme that is currently in place from the Department of Basic Education.

2.9.1.3 Infrastructure

School infrastructure include aspects that are associated with instructional improvement such as shared governance, social trust, collaborative work structures among teachers and professional development (Hopkins, Spillane, Jakopovic & Heaton, 2013, p.2000). These aspects are found in limited extents in rural schools of iLembe district. Distance between rural schools is such that it is virtually impossible to conduct collaborative teaching between teachers. Shared governance is non-existent.

2.9.1.4 Electronic technology

James and Patrick (1994, p.678) maintain that “electronic technology has enormous power to intensify and reinforce almost any bias the user or designer brings to it.” The rural schools in iLembe district that form part of this study do not have such technologies for mathematics teaching and learning. The lack of such technologies negatively affects both teaching and learning of mathematics.

2.9.1.5 Teacher retention

Rural way of life is not appealing to mathematics teachers in particular. These teachers are in high demand and generally urban schools have the advantage in attracting them. This is because of the good infrastructure and living conditions. Rurality of schools does not promote quality teaching of mathematics. Teachers experience various challenges from typical infrastructure to lack of technological advancement (James & Patrick 1994, p.678). Creativity in teaching becomes limited due to frustrating environment (Hopkins, Spillane, Jakopovic & Heaton, 2013, p.200). Teachers

do not prefer working in rural schools because of these challenges. Teacher retention rate is also very low.

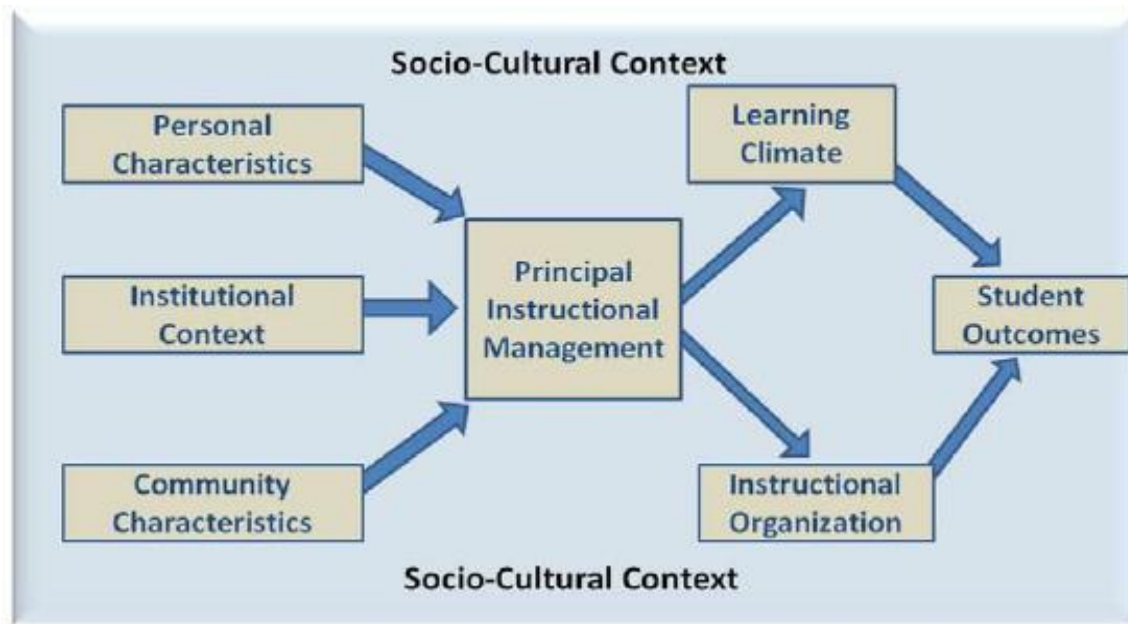
Learners are not able to learn mathematics to their full potential. This is due to a number of factors including parents that are not involved in assisting with homework (Robinson, Lloyd & Rowe, 2008, p.641). Levels of poverty in rural areas is also high and this impacts badly on mathematics knowledge acquisition by learners. Modern trends in education makes use of technologies. These are not readily available in rural schools.

2.10 SECTION B: Theoretical Framework- Far West Lab Instructional management model (Bossert *et. al.*1982)

The theoretical framework of this study is informed mainly by Instructional leadership theory. While various models of instructional leadership will also be discussed with the aim of revealing important facts about instructional leadership. The results of the study conducted by Mitchell and Castle (2005) suggest that instructional leadership does not have a specific model that deals with the theory. Likewise, in this study, the models will be adjusted and used to conceptualise the tasks around which instructional leaders arrange their actions. The theory that encloses instructional leadership is represented in a model which includes vigorous collaborations amongst leaders and educators in as far as curriculum, instruction and assessment are concerned. Within this model, the heads of departments strive for beliefs, understanding of truths and great knowledge of mathematics working collaboratively with them to improve learner performance. Fullan (2002) is of the same view that effective leadership extends capability in schools for greater results.

The study incorporates Bossert, Dwyer, Rowan and Lee (1982)'s Far West Lab instructional management model. Bossert and his colleagues clearly outlined ways by which school leaders' impact the development of student learning. The Far West Lab model considers numerous structures of the school context in which school leaders' lead teaching and learning. This phase concurs with the fact that the Heads of Department must monitor the mathematics closely for the purpose of good improvement of results (Seobi & Wood, 2016), also this phase contains three main leadership functions which include, "supervising and evaluating instruction, coordinating the curriculum, monitoring student progress" (Bossert, Dwyer, Rowan & Lee, 1982, p. 3). Supervising and evaluating instruction comprise activities of instructional support to teachers, supervise

classroom visits informally and aligning classroom practice with the results of the subjects monitored, which is mathematics in this case.



Far West Lab Instructional management model (Bossert *et. al.*1982)

2.10.1 Institutional context

Institutional context refers to the educator sector which comprises of different sections namely: the state, region, district units (Bossert *et al.* 1982). Although the district context is just one broader element (Bossert *et al.*, 1982), it is an important context in the education system. The scholars assert that the features of the education system have an influence on the leadership practices. Scholars, Gillett, Clarke and O'Donoghue (2016, 594-595); Schwarz and Brauckmann (2015, p.21) posit on the impact of changing institutional context. A comparative study by Lee and Hallinger (2012) supported that the structures within the institutional context do shape the behaviours and role definitions of the school leaders. The first finding was based on the notion related to the amount of time spent on the job. It was reflected that the school leaders allocated enough time on leadership practices and less time on administrative duties. Lee and Hallinger (2012) also analysed the influence of the institutional context in change of policy contexts and the

carryover of leadership practices. The second finding was that the policy changes had an impact on the role and behaviour of school leaders.

2.10.2 Community context

Bossert *et al.* (1982) are of the view that it is crucial for the school leaders to consider and respond to the needs of different communities. For example, “schools situated in suburban areas that assist children from middle class households with those in rural or urban schools serving poorly disadvantaged communities” (Bossert *et al.*, 1982, p.6). A study by Hallinger and Murphy (1986) supported the Far West Lab model on effects regarding the contexts of community. Although the location of schools was considered, Othman and Muijs (2013) discovered that the allocation of funds is a challenge. The majority of rural schools are disadvantaged in receiving physical, human and financial resources. Context features either shape or raise the role and quality of leadership (Hallinger & Deck, 2011). Nkengbeza (2016) posits on the impact of community conflict in the context of community. His study asserts on how school conflict reshapes the roles and behaviours of school leaders. The scholar argues that the focus of the school leaders should not only be in the internal and external environments but also on the strategic developments of the school. Nkengbeza (2016) reveals that school leaders had a tendency of focusing more on school-community than improving the curriculum needs and school security.

2.10.3 Socio-cultural context

Hallinger (1995) located educational institutions in a cultural context. The scholar reflected on organisational participants, leaders and their behaviours in response to different cultural values. The educational leadership practices applied in a school can be through the exploration of culture. Bossert *et al.* (1982) assert that successful leaders always adhere to a particular context in order to accomplish the desired objectives. Far West Lab framework indicates that school culture is one of the subjects with a great influence on the school leaders. Bossert *et al.* (1982)’s empirical research elaborate on how socio-cultural setting outlines school leadership. This study also discovered that the correlation between socio-cultural context and school leadership practices is progressively accumulative. Bossert *et al.* (1982) concluded that in order to obtain results, the school leaders

should modify their leadership practices in ways that are harmonious with the prevalent values and standards in their different socio-cultural contexts.

2.10.4 Economic context

The level that school leadership represents is based on the economic level of the society (Lee & Hallinger, 2012, p.12). The scholars posit that the functioning of the school is enhanced by the level of economic development of a society. They also highlighted that although the economic context is the responsibility of school leaders, it is crucial to ensure that it does not impact on the leadership practices. A comparative study was conducted by Lee and Hallinger (2012, p.13) on “the impact of the nation’s level of economic development on principal practice”. Two main findings were yielded with a contradicting factor of instructional leadership. In other words, when principals from societies with higher Gross Domestic Product were given more time to do the job, they also provided higher results. The principals of developing nations were not performing well even allocated less time on instructional leadership. The findings of the study resulted in the suggestions of professional development of school leaders in relation to time and commitment.

2.10.5 Political context

The political context of educational leadership emerged during the early 2000s from the predominant scholars of educational leadership and management (EDLM). These scholars have analysed the impact of politics in education management and how they are reinforced in education programmes. They also critique in the impact of the political context in shaping the practices of the school leader’s beliefs and attitudes. A research in education and management was conducted by Truong, Hallinger and Sanga (2016) to examine how leadership practices enacted by school leaders can be shaped through the political context. The findings revealed that they believe in the “voice of school leaders as the voice of the Party (politics) and the voice of the state (administration)” (Truong, *et al.*, 2016, p14). The school leaders believed that the process of management is enacted by the two roles, namely: politics and administration. Hallinger and Truong (2014) acknowledge that the political context has an impact on shaping the school leaders’ conduct.

2.10.6 School improvement context

Far West Lab model advances theoretical discourse in educational leadership (Bossert *et al.*, 1982, p.11) by emphasising the influence of the context of the school amongst school leaders. Bossert et al. (1982, p.11) proposed that “context features shape the behaviour of leaders and that successful school leaders adapt their leadership to the needs, opportunities and constraints in their work contexts”. Even though the model did not deliberate on other related influential contexts that might impact on the leaders of the school, it elaborates on means that school leaders retort to the requirements and diverse situations hence the Heads of Department are accountable for their departmental performance. The emphasis of this model on school improvement correlates with the fact that when mathematics departmental heads employ suitable instructional practices, mathematics results will be improved and the school performance will also be improved.

2.11 Conclusion

In this review, the theoretical orientation of the study was discussed and the literature related was reviewed based on the critical research questions. The discussion of the review began with the discourse on the instruments engaged in the study. An international and national mathematics related literature was discussed in relation to its relevance to the leadership practices. The studies reflected some reasons of poor performance of learners in mathematics particularly in rural communities namely: lack of information on leadership roles in mathematics curriculum, geographic challenges, poverty as well as technology. However, in the same vein, I strongly believe that well informed Heads of Departments are able to apply different skills and enact the leadership practices that will improve the existing situation. This is followed by conceptual and theoretical framework interrelated to the instructional leadership practices. The subsequent Chapter will discuss the research design and methodology engaged in this study.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The previous chapter dealt with conceptual and theoretical frameworks that informed the study. The literature related to the study was reviewed in relation to the critical research questions. This chapter discusses the research paradigm, approach and methodology engaged in this study to address critical research questions. I remind the reader of my critical research questions:

- What are the instructional leadership practices of heads of department with regard to mathematics in rural secondary schools?
- Why do the heads of department operationalize instructional leadership of mathematics in the way they do in rural secondary schools?
- How can the instructional leadership practices enacted by the mathematics heads of departments in rural secondary schools be transformed to ensure better learner outcomes?

This chapter commences by discussing the research paradigm, research approach and research methodology underpinning this study. Thereafter I explain the sampling procedures and the research methods that were used to explore the instructional leadership practices used by mathematics heads of departments in their schools. I also make clear to the reader the processes I employed in analysing the data. This is then followed by the ethical protocols I observed in the study and the steps employed to confirm that the findings are trustworthy. Finally, this chapter discussed the limitations related to the study.

3.2 Research Paradigm

A paradigm is “a group of related extrapolations about the social world which provide theoretical and conceptual framework for the organized study of that world” (Creswell, 2009, p.6). Mertens (2005) contends that when theoretical framework is distinguishable from a theory, it is regarded as a paradigm which impact on the study and interpretation of knowledge. Taylor and Medina’s

(2013, p.1) definition of a paradigm provides three components: beliefs about the nature of knowledge, methodology and criteria for validity. According to Cohen and Manion (1994, p.38), the term 'paradigm' can be defined as "insecure collection of rationally related assumptions, concepts or theories that align reasoning and research". The above definitions of a paradigm are in line with Maree's (2011, p.47) description that a paradigms focuses presumptions about the essential aspects of realities that concerns the world. Similarly, Briggs and Coleman (2012, p.19) refer to paradigms as a 'set of beliefs or epistemological assumptions'. Every researcher's study is guided by paradigmatic stance (Enerst, 1994). Denzin and Lincoln (2005) also corroborate the view that paradigms inform the process of research ensuring that the philosophical truths of the world are divulged. Therefore, a particular paradigm guides the research. Creswell (2012, p.10) affirms our major research paradigms namely: "positivism, interpretivism/constructivism, transformative and pragmatism". Each paradigm constitutes four components: ontology, epistemology, methodology and axiology.

The first paradigm I discuss is positivism which is referred to as "scientific method" (Taylor & Medina, 2013, pp.2-3) and is based on intellectual, empiricist philosophy which resolute the effects (Cresswell, 2003, p.7; Briggs & Coleman, 2012, p.21). According to Mertens (2007, p.8), "positivism is applied to the social world on the assumption that explanations will be provided". However, Cohen, Manion and Morrison (2011, pp.17-18) argue that when conducting a study that concerns school context, positivism might not be suitable since it does not observe the complexities of the phenomena from a human and social perspective. The second paradigm is interpretivism which focuses on understanding (Taylor & Medina, 2013, p.4) the constructed reality about the studied situation (Briggs & Coleman, 2012, pp.23-24). Cohen and Manion, 1994, p.36). Creswell (2003, p.8) postulates that the background and the expertise of the research is revealed through interpretivism. Thirdly, transformative paradigm was formulated after it was discovered that the most dominant researchers do not address issues regarding social justice (Creswell, 2003, p.9). Cresswell (2003) also stresses that transformative researchers believe in the involvement of politics and they may use qualitative and quantitative methods same as the interpretivist (Taylor & Medina, 2013, pp.10-11). Fourthly, pragmatism which includes tools from both positivist and interpretivist paradigms (Knipe & Mackenzie, 2006). According to Creswell (2003, p. 11), the focal point of pragmatism is on what and how of the problem investigated.

For the purpose of this study I utilised the interpretive paradigm, which ontologically asserts that there are several realities (Nieuwenhuis, 2007). An interpretive paradigm has three main assumptions. An ontological assumption is based on “the nature of reality” (Mertens, 2007, p.215). The main concern of ontology is on the reality of the situation. Furthermore, Mertens (2007, p.216) states that “an interpretive paradigm has multiple realities that are socially constructed” (Taylor & Medina, 2013, pp.4-5). In this study, three Heads of Department of three different schools constituted research participants. The main objective of the interpretive paradigm is to “propose an understanding of a situation with an in-depth analysis of what is happening, why and how it happens” (Maree, 2011, p.47). I would argue that interpretivism is the theoretical perspective of this study for some reasons, first for deliberations and creativity of people’s actions. Secondly, for their active construction in the social world. Thirdly, the researcher does not intervene with the natural state of the social world that is studied (Ahmed, 2008). In the context of this study, it will allow me to attain a better understanding and elucidations of how the Heads of department apply the instructional leadership practices in Mathematics. I evoked knowledge from mathematics departmental heads to understand and create meanings of their instructional leadership practices, and its effect on mathematics teaching and learning. Since every departmental head of each school has a different view, results will vary.

In terms of epistemology, “knowledge is constructed socially and historically within the complex cultural context” (Mertens, 2007, p.216). An epistemological perspective of interpretivist paradigm maintains that knowledge that was socially constructed (Nieuwenhuis, 2012) was used to generated qualitative data. The epistemological assumption focuses on nature of knowledge, and “the relationship between the researcher and the participant (Mertens, 2007, p.217). In this study, the construction of knowledge from the voluntary information provided by mathematics departmental heads through interviews. According to Mertens (2007, p.215), methodological assumption “relates to the appropriate approach to systematic inquiry”. This is based on how I have gathered information regarding the research. Methodologically, an interpretive paradigm adopts qualitative approach as discussed in the following subsection (Briggs & Coleman, 2012, pp.27-28).

3.3 Research approach

Briggs, Coleman and Morrison (2012, p.107) posit on three distinctive approaches used by researchers in answering research questions of their studies namely: quantitative, qualitative and mixed research approach. “A research which applies a positivist or postpositivist paradigm tends to predominantly use quantitative methods (Knipe & Mackenzie 2006, p.2) while interpretivist/constructivist paradigm is viewed through the lens of qualitative methods” (Knipe & Mackenzie, 2006, p.3). Cresswell (2012, p.13) identifies six major characteristics of quantitative research methods namely: identifying a research problem based on trends in the field, creating hypothesis and its purpose, collecting numerical data, using statistical analysis and writing a report using unbiased approach. De Vos, Strydom, Fouche and Delport (2005, p.74) substantiate that quantitative studies focus on “experimental theory with variables, numerically measured, statistically analysed to impact on the facts”.

Mixed method research is defined as the “mixture of qualitative and quantitative approaches in many phases in the research process” (Cresswell & Clark, 2007, p.6). As a method, in order to understand the research problem it focuses on collecting, analysing and combining both qualitative and quantitative data in a single or series of studies (Cresswell, 2012, p. 535). The fundamental impression of mixed methods is to mingle the strengths and weaknesses in both qualitative and quantitative methods. However, Gorard (2001, p.7) identifies mixed methods as a “key element in the development of social science and education research emphasizing strength in the utilization of combine methods”. Briggs, et al. (2012) and Creswell (2012) highlight on certain flaws of mixed methods that they are expensive and time-consuming in data generation and analysis. These flaws are substantiated by Gorard (2004, p.9) that “mixed methods requires greater level of skill, might lead to less waste of useful information, creating a greater impact and promoting criticism among researchers” (Knipe & Mackenzie, 2006, p.7).

Cresswell (2012, p.1) defines qualitative approach as “a research approach that is best suited to address a research problem in which you do not know the variables and need to explore”. Gialdino (2011) is of the view that qualitative research comprises of philosophical assumptions based on different orientations and approaches that promote new strategies of generating and analysing data. Gialdino (2011) classify qualitative research characteristics as they relate to who or what is studied, method particularities and as they relate to the goal of the inquiry. Firstly, qualitative research is

interested in the way people interact with the world (Mason, 2006, p.16). Qualitative research is interested in producing meaningful lifetime understandings (Cresswell, 2012, p.2). This research method is also interested in the interaction of revealing different knowledge with different views and practices (Silverman, 2000, p.89). Morse (2002, p. 875) contends that the major aim of qualitative research approach is on people's thoughts and their applications to the situation of the studied phenomena. The scholars describe qualitative research as fundamentally grounded in communication with reality as its main focus and interactions between the researcher and the participants. Morse (2004, p.739) posits that qualitative research focuses on elucidations, explanations and clarifications on understanding and prioritising the case in the context of its theory.

The study adopted a qualitative research approach. Slavin (2007, p.121) defines qualitative approach as “an approach that stresses complex elucidation of the instructional background, contemplated to explore social phenomena”. In the same vein, Henning, van Rensburg and Smith (2004, p.5) posit that qualitative approach accommodates different views of the theme. These scholars state that in qualitative research, participants are allowed to demonstrate their actions and provide open-ended views. De Vos, Strydom, Fouche and Delport (2005, p.74) also maintain that the qualitative approach is comprehensive and apprehend people's social connotations. Thus, it provides detailed arguments regarding the views of the participants. This approach will be appropriate for this study because the purpose is to obtain a detailed understanding of instructional leadership practices of the Heads of Department in mathematics. “Qualitative research approach is best suited to address a research problem in which you do not know the variables” (Cohen, Manion & Morrison, 2007, p.473). This is supported by Cresswell's (2012) view that qualitative research is all about in-depth study of phenomena. As a result, it gave me an in-depth and rich interpretation of Heads of Departments' operations with regard to their instructional leadership practices in mathematics.

3.4 Methodology

A case study will be used as methodology. Case studies are conducted when a deeper understanding is required about a particular case (Stake, 2005). Rule and John (2015, p.1) define a case study as “a systematic and in-depth investigation of a particular instance in its context in

order to generate knowledge”. A case study provides “a unique example of real people in a real situation, enabling the readers to understand ideas more clearly than simply by presenting them with abstract theories or principles” (Cohen, *et al.*, 2011, p.289). Briggs, Coleman and Morrison (2012, p.142) define a case study as “an in-depth analysis of a single entity”. In this study the case is the instructional leadership practices of mathematics heads of departments. It is a case of three rural secondary schools.

Zanial (2007, p.4) contends that a case study “explores and investigates current real-life phenomena through a detailed contextual analysis of a limited number of events and their relationships”. Similar sentiments are expressed by Simons (2009, p.3) that a case study is a “comprehensive investigation from various points of view of the intricacies and distinctiveness of a specific concept, approach, course of study or structure in a real-life situation”. Cohen, Manion and Morrison (2011, p.289) contend that the results of a case study reports on reality, hence promoting a high level of understanding (Yin, 2009, p.18). In noting that a case is a bounded system, I confine the case to the instructional leadership practices of heads of departments from 2015 to 2018. Further, I confine the study to three rural secondary schools.

Yin (2005, p.3) differentiates between three types of case studies based on their outcomes, namely: “explanatory, exploratory and descriptive case studies”. Explanatory case studies focuses on testing theories while exploratory case studies act as a pilot to other studies or research questions. Yin (2005, p.5) emphasises that exploratory case studies can be used “to generate hypotheses that are tested in larger scale surveys, experiments or other forms of research, e.g. observational”. An exploratory research should provide a plan that aver on “what is to be explored, a purpose of the exploration, and the principles to be followed for the success of the exploration” (Yin, 2005, pp.6-7). However, the fundamentals should influence an exploratory case study. Descriptive case studies focuses on providing narrative accounts (Yin, 2005, p.4) . Events are traced and analysed in a descriptive manner, as the author's purpose is not so much to describe the revolutions as to determine whether they followed similar direction. This study is a descriptive case study design as it would assist me to probe into the instructional leadership practices of mathematics HODs.

3.5 Selection of schools and participants

The selection of the District was informed by matric provincial results (School Report, 2016). Schools were also selected according to their performance as rated by the District (School report, 2016). However, the sample of this study was guided by the research problem, research design as well as the research questions. Maree (2011, p.79) defines “sampling as the process of selecting a section of population for the study”. According to Lawrence, Manion & Morrison, (2007, p.102), there are two main methods of sampling, namely: “probability sampling (also known as a random sampling) and non-probability sampling (also known as a purposive sampling)”. Firstly, “in a probability sample the chances of members of the wider population being selected for the sample are known, whereas in a nonprobability sample the chances of members of the wider population being selected for the sample are unknown” (Lawrence, Manion & Morrison, 2007, pp.102-103). Secondly, “in probability sampling, every member of the wider population has an equal chance of being included in the sample while in nonprobability sample, every member of the wider population does not have an equal chance of being included in the sample” (Lawrence, Manion & Morrison, 2007, p.103). In addition, the district was chosen on the basis of convenience since it is where I work (Creswell, 2012).

For this study, the selection of the heads of department was done through purposeful sampling considering their knowledge and experience about their instructional leadership in mathematics. According to Leedy and Ormrod (2010, pp.5-6), “data collection in a qualitative research may involve a purposeful sampling of up to twenty-five individuals”. In purposeful sampling “the researcher selects certain participants from the population that will provide information about the topic of interest” (Lawrence, Manion & Morrison, 2007, p.101). In this case, mathematics HODs were specifically selected to provide information in as far as the application of their instructional practices in leading mathematics. This is in line with Rule and John’ (2011) recommendation that “participants should be purposely chosen on the basis of their fitness in advancing the purpose of the research” (Yin, 2009, p.35). Therefore, I have selected mathematics HODs from three different schools based on learners mathematical academic performance and demographic contexts of the school.

The sample size was appropriate to my study since I wanted to explore at different levels of mathematics performance from different schools. In other words, three departmental heads were

enough to provide me with detailed data and I was able to analyse data provided. Ivankova, Cresswell, and Plano Clark (2007, p. 257), state that a small sample is selected in consideration of the experience of the participants on the case studied. This is corroborated by Lawrence, Manion and Morrison (2007, p.102) that “large samples bring a larger degree of variation and the researcher should avoid redundancy”. The scholars also recommend that larger samples are suitable for survey research. However, the researchers in this type of investigation are cautioned of “non-response, abrasion and respondent mortality, i.e. some participants will fail to return questionnaires, leave the research, return incomplete or spoiled questionnaires” (Lawrence, Manion & Morrison, 2007, pp.102-103). Ultimately, the HODs in mathematics were the primary focus of the study as I wanted to gain an insight of their instructional leadership practices on learner achievement outcomes in Mathematics. The names of selected schools and participants remained obscure through anonymity.

3.6 Methods of data generation

There are different methods of generating data in a qualitative study, namely: questionnaires, interviews, documents, observations and artefacts review (De Vos *et al*, 2005). Lincoln and Guba (1985, p. 269) recommend two main types of interviews, namely: structured and unstructured interviews. “Structured interviews are useful when researchers are aware of what they do not know and therefore are in a position to frame questions that will supply the knowledge required” (Lincoln & Guba, 1985, p. 269). Whereas unstructured interviews “are used when researchers are not aware of what they do not know and therefore, rely on the respondents to tell them” (Lincoln & Guba, 1985, p. 269).

In this study I used semi structured interviews to produce data. According to Briggs *et al.* (2012, p.208) “interviewing is a popular method used to generate data in qualitative research”. Kvale (2008, p.11) defines qualitative interviews as an endeavour to comprehend “the interviewees’ elucidation of the meaning of the described phenomena”. Kvale’s (2008) definition is corroborated by Cohen *et al.* (2011, p. 349) that interviews refer to the reciprocating views between two or more individuals striving towards responding to purposely designed questions. Interviews allow participant to discuss and interpret situations considering their points of view (Cohen, Manion & Morrison, 2009). Walliman (2011, p.192) suggests that “face to face interviews may be conducted

at the work place at the convenience of the participant”. In this study, semi-structured interviews were used in order for the participants to express their views. Semi-structured interviews are regarded as a planned open-ended guide that requires probing in its process. Briggs, et al. (2012, pp.215-216) aver that “probing is part of semi-structured interviews since it clarifies issues of concern as they arise during the interview”. According to Cohen, Manion and Morrison (2011), semi-structured interviews can be regarded as an open-ended interaction that allows for expansion of ideas through probing to take place. The scholars point out that the use of interviews in research represents a move towards regarding knowledge as generated between humans, often through conversation.

The interview schedule that I constructed was informed by the three research questions reflected in chapter 1 of this study and at the beginning of this chapter. The interview schedule contains nine question sequentially arranged to follow a pattern of the research questions i.e the first three relate to the first research question and so on. According to Neuman (2011), interviews are very effective in capturing the participant’s point of view. The interviews were audio – recorded (Kvale, 2008). Briggs, et al. (2012, pp.217-218) posit that interview “recording brings attention to the interviewee and legitimizes the writing of research insights during the interview”. The digital recorder allows more time to listen to the interviewee and to probe their responses (Briggs, et al. (2012, p.246-247). It also allows for the complete transference of data and transcription process.

3.7 Data analysis

Data analysis is described by Cohen, *et al.* (2011) as a process of clarifying and preparing the acquired data. In other words, raw data is being organised and simplified. The acquired data is then condensed and organised in an understandable form. This permits the researcher to draw clear conclusions regarding the data (Creswell, 2012). In order to facilitate analysis of the data all recorded interviews were listened to repeatedly after each interview (Briggs, et al. 2012, p. 249).

I transcribed all the data from the three participants. De Vos’s (2005) views that data analysis requires repeated reading of the transcripts for in-depth understanding. Qualitative content analysis was performed following the process of transcription. Cohen, Manion and Morrison (2009) define content analysis as a process of simplifying and classifying written data. Krippendorff (2013,

p.24) contends that content analysis is a skill of research in creating valid deductions from data. Cohen, *et al.* (2007, p. 475) argue that content analysis entails “summarising and reporting written data-the main contents of data and their messages.” Cohen, *et al.* (2007, pp. 475 - 487) posit on the steps that I followed in analysing data. Firstly, texts were coded through the categorization of words, determination and expressions. Secondly, the categories were eventually contrasted to create association. Ultimately, through this process I was able to draw theoretical conclusions from the text (Cohen, *et al.*, 2011). Lastly, in answering my research questions I provided a written detailed description of the conclusions.

3.8 Ethical considerations

In this study I tried to ensure that all protocols of ethical issues regarding my research are observed. Cohen *et al.* (2011) assert that it is imperative to observe ethical principles when conducting a research. These scholars argue that such observations assist in overcoming possible challenges during the process of research. Ethical issues, namely: “the prevention of intimidation of the participants; informed consent; the avoidance of deception of participants; avoidance of violating privacy of participants” (Cohen *et al.*, 2011, p.85) are addressed in this research.

In acquiescence with the procedures, I received a permission that I applied for in order to conduct research in the selected rural schools by the KwaZulu-Natal Department of Education and the school principals. A formal application for ethical clearance was also sought from the University of KwaZulu-Natal Ethical Office, and I was granted permission for the research to proceed. In terms of participation in the study, the school principals signed the informed consent forms which accorded me access to their schools. Participants were well informed about the purpose of the research and that their participation in the study was voluntary (De Vos, *et al.*, 2005, p.57). Participants were also made aware of their right to withdraw their participation during the process of research (Cohen *et al.*, 2011, p.78). Cohen *et al.* (2011) assert that “the essence of anonymity is that information provided by participants should in no way reveal their identity.” Therefore, to maintain anonymity of the interviewed heads of departments, I used pseudonyms for their names and schools (Rule & John, 2011, p.112). “The participants were made aware of the purpose of the study prior to the commencement of each interview” (Cohen *et al.*, 2011, p. 64). Interviews were recorded after obtaining the consent from each participant.

3.9 Trustworthiness

The purpose of trustworthiness in qualitative research is to corroborate the findings of the study (Lincoln & Guba, 1985, p. 290). They suggest four principles to be considered in achieving trustworthiness of a study, namely: “credibility, transferability, dependability and confirmability” (Lincoln & Guba, 1985, p. 290).

3.9.1 Credibility

Credibility refers to the degree to which a case study has documented the completeness and core of the actuality of a case (Rule & John, 2011). Lincoln & Guba (1985, p. 296) contend that researchers should maintain trustworthiness of the study through credibility. In other words, the researcher should ensure that the quality of the research is convincing and believable. This is substantiated by Marshall and Rossman’s (1995) view that conduction of a research should reveal accuracy and credibility throughout the process. Member-checking of transcripts and analysis of data and findings was done by individual participants to enhance credibility. Mutch (2005) states that member-checking promotes accuracy and credibility of the research.

3.9.2 Transferability

Lincoln and Guba (1985, p.217) refers to transferability as the application of the findings of the research in different projects of the same context. These scholars assert that qualitative researchers should provide sufficient data about the phenomenon for other researchers to use - if they deem the findings as applicable to the new situation. Transferability was also ensured by the provision of detailed necessary data of the study, namely: geographic area of selected schools, number of participants, methods used in generating data. Therefore, readers could relate their projects with the context of this study.

3.7.3 Dependability

Dependability refers to “an assessment of the quality of the integrated processes of data collection, data analysis, and theory generation” (Lincoln & Guba, 1985, p.217). These scholars contend that “the concept of replication is problematic, however, an interpretive assumption is that the social world is always being constructed” (Lincoln & Guba, 1985, p.217). This is substantiated by Rule and John’s (2011, p. 107) view that dependability emphasises “Methodology vigour” and unity

towards producing conclusions which researchers can confidently accept. For the purpose of this study, the researcher wanted to maintain consistency between the findings and data analysis.

3.9.4 Confirmability

Confirmability refers to “a measure of how well the inquiry’s findings are supported by the data collected” (Lincoln & Guba, 1985, p.318). Confirmability was ensured by transferring data, findings, as well as the conclusions a critical reader to authenticate the study. Lincoln and Guba (1985) also stress the significance of determining whether other researchers can confirm the findings of the study.

3.10 Limitations of the study

Creswell (2012, p.199) refers to limitations as possible challenges and weaknesses of the study. Additionally, he states that “these weaknesses are spelled out in detail as they often relate to inadequate measures of variables, loss or lack of participants, small sample sizes, errors in measurement, and other factors typically related to data collection and analysis” (Creswell, 2012, p.199). Vithal and Jansen (2012, p.35) state that “acknowledging limitations of a study authorise the reader to approve the study”. The main limitation of this study was the availability of the participants for the interviews. Departmental heads are always engaged in different school management activities. However, I found it impossible to conduct the interviews during the school hours. I arranged with the individual participants to conduct the interviews at their convenience.

3.11 Conclusion

In this chapter I have discussed research design and methodology applied in this study. The interpretivist paradigm and qualitative approach was described followed by case study design. The selection of participants and methods of generating data were presented. Furthermore, the analysis of data, issues of trustworthiness and considerations of ethical issues were outlined. I concluded the chapter by discussing limitations to the study. Chapter Four focusses on data presentations and discussions.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

In the previous chapter I discussed the research design and methodology informing this study. A qualitative research approach was adopted and a case study methodology was used. Three mathematics departmental heads were selected for this study to reflect on their instructional leadership practices. This chapter focuses on the analysis of data, findings and the discussion of data produced during the interviews. The data generated from semi-structured interviews is presented and discussed under themes and sub-themes that emanated from the interviews. I used my critical research questions as an organising structure to present the data. To remind the reader, the following are my critical research questions:

- What are the instructional leadership practices of Heads of Department with regard to mathematics in rural secondary schools?
- Why do the Heads of Department operationalise instructional leadership of mathematics in the way they do in rural secondary schools?
- How can the instructional leadership practices enacted by the mathematics Heads of Departments in rural secondary schools be transformed to ensure better learner outcomes?

For each research question, my findings are presented thematically. As part of the analytical interpretation of the findings, the findings were examined using the theoretical frameworks and literature reviewed in chapter two of the study.

4.2 What are the instructional leadership practices of heads of department with regard to mathematics in rural secondary schools?

The HODs are expected to perform the leadership practices as discussed below, namely: setting vision and goals for the teaching and learning of mathematics, supervision of teacher's work, curriculum implementation monitoring student learning and develop teachers.

4.2.1 Setting vision and goals for the teaching and learning of mathematics

Vision is about “the ability to plan the future with imagination or wisdom” (Hauge, Norenes & Vedøy (2014, p.358). Winter (2004, p.5) explains that “a vision is more than just a dream”. “It is an ambitious view of the future that everyone in the organisation can believe in, one that can realistically be achieved, yet offers a future that is better in important ways than what now exists.” According to the Department of Basic Education (DBE), vision is a sense of direction for the school. The DBE's vision is to provide quality teaching and learning for all and its goal is improving the standard of basic education (DBE, 2010).

This theme emerged when participants were asked about their views with regard to their vision and goals for the teaching and learning of Mathematics. All three participants were resolute about their visions and goals regarding the teaching and learning of mathematics in their schools. The views of the participants reflected that they are striving towards a common goal for the teaching and learning of mathematics. For instance, Mr Ntuli of Grace Secondary School said:

I believe in vision sharing. Vision is all about communicating the ideas with the members of the school. As a leader of mathematics department, I always share my vision with the departmental teachers. I also share goals of what is expected of us by the end of the year so that we work towards a common goal.

Miss Mhlongo of Shawbury High School echoed similar sentiments. She highlighted that she ensures that vision is shared amongst all mathematics teachers. The following statement confirms her view:

My responsibility is the creation of successful vision and goals in my department. So I ensure that all activities are in line with the vision. I have a belief that a diverse

vision transforms the situation. So I make sure that everyone in mathematics understands the vision and goals.

The above participants were in agreement that they share their vision with departmental teachers. They also share the same view that when vision is shared, the implementation process becomes easier. These views are substantiated by Supovitz and Poglinco (2001) that vision should be shared amongst members of the school. According to the evidence provided by the participants regarding the vision and goals of the teaching and learning of mathematics, it is clear that the reality of a vision lies on widespread acceptance by other members of the organisation. Grossman and Cawn, (2016) also agree with Mr Ntuli and Miss Mhlongo's views on the sharing of the vision that "when a vision is clearly articulated and followed every day, decisions and actions throughout the organisation respond to current problems and challenges in ways that move the organisation towards the future rather than maintain the status quo" (Grossman & Cawn, 2016, pp. 2-3).

Mr Ntuli and Miss Mhlongo views is substantiated by Winter's (2004, p.6) principles regarding a good vision that "a good vision brings out the best by speaking to the hearts of employees, letting them be a part of something bigger than themselves". However, "a good vision clarifies an image of an organisation's future, lets employees see how they can contribute, and enables employees to reach higher-levels of excellence" (Grossman & Cawn, 2016, p.4). Winter (2004, p.7) also supports Miss Mhlongo's statement of a diverse vision transforming the situation that vision establishes the standard of excellence. Supovitz and Poglinco (2001) contend on the basis of sharing the vision, that when vision is solely held by single person, it becomes invisible to others no matter how powerful that vision. The Department of Education (2004) endorses the view that an organisational vision is a team effort and should be owned by all members.

Mr Sokhulu of Vukuzakhe Secondary School stated that the main contributing factor towards the vision and goals is the provision of good quality in the teaching and learning of mathematics. He said that by organising his vision in relation to the teaching of Mathematics. This is what he said:

My vision is in line with CAPS requirements considering the guidelines and the vision of the Department of Basic Education, which is to provide teaching and learning of good quality. So I will classify my vision looking into three different parts as input throughput and output. The input is whereby I teach maths, I input information to the students and throughput is their work including class exercises

and homework. Output is their results considering how they understand what is taught.

The data generated from Mr Sokhulu of Vukuzakhe Secondary School is silent on the issue of sharing a vision as he alluded to the alignment of vision with CAPS requirements and the DBE's vision. I strongly agree with this notion because it is difficult to obtain the necessary leadership skills with no clear understanding of personal and organisational vision (Rossow & Warner, 2000).

However, Winter (2004, p.7) affirms on what Mr Sokhulu highlighted that vision guides everyone in an organisation through the same pace via the same path. Therefore, employees should be inspired and motivated through the establishment of a gripping vision, hence "successful leaders are those who handle the daily challenge of obtaining short-term goals and focus on the future as well" (Supovitz & Poglinco, 2001, pp.10-11).

The Far West Lab (1982) instructional management model reflect that the development of a school climate conducive to teaching and learning emanates from a proper vision created by school leaders. A learning climate and a well-structured instructional organisation leads to better student outcomes.

4.2.2 Supervision of teachers' work

The findings that emerged were that mathematics Heads of Departments strove to enact their instructional leadership practices in many ways. One of these ways was supervision of teachers work. As per the Far West Lab Model (1982), supervision of teachers work forms an integral part of the instructional organisation of the school. Supervision is about being in charge of a person or a task and inspecting the work that is being done. At schools, principals often delegate supervision of teachers work to Heads of Department. Hallinger (2003) describes supervision as the focal point of instructional leadership that is crucial in the development and instruction of curriculum in schools. They participants demonstrated various practices in this regard as discussed below:

4.2.2.1 Checking of teacher's lesson preparation

Lesson preparation is based on planning done by teachers for what they will teach in the classroom. The discussions from the three departmental heads reflected that they ensure that lesson preparations are done by mathematics teachers in their departments and is regularly monitored. For instance Mr Ntuli of Grace Secondary School said:

I supervise teacher's work by following CAPS document ensuring that all mathematics teaching is according to CAPS standard and that teachers adhere to their CAPS documents. I also make use of the Annual Teaching Plan (ATP) to ensure that lesson preparation is in line with the requirements.

Similarly, Miss Mhlongo of Shawbury High School assured her supervision of teachers work by saying:

I perform my responsibility of supervision by following the DBE systems and mechanisms. I ensure that I have a collection of their teaching and continuous assessment (CASS) files with ATPs, programmes of assessments, lesson plans, scopes and subject improvement plans.

Mr Sokhulu of Vukuzakhe Secondary School also indicated on how he supervises teacher's lesson preparation. This is what he said:

I make sure that teachers submit their daily lesson plans for me to know what is going to happen in each mathematics class each day. I also make use of the curriculum tracker towards the end of each term to ensure that the expected outcomes are achieved. I follow the departmental policy and a schedule of teachers file submission in making follow ups and ensuring each teachers supervision and evaluation of their teaching during their lessons.

The data revealed by the participants with regards to the supervision of teachers work indicates that they have proper understanding of supervision. They also share knowledge and expertise as part of the supervision process. Even though mathematics Heads of Departments carry heavy workloads, they employed different strategies to perform their supervisory roles.

Mr Ntuli and Miss Mhlongo indicated that they follow CAPS procedures in supervising teachers' work, which is the curriculum put in place by the Department of Basic Education. However, it was only Mr Sokhulu who emphasised that he monitors each lesson plan daily. Through daily supervision, Mr Sokhulu maintains a high visibility within his department, which Hallinger and Murphy (2012) describe as a key job descriptor of an instructional leader.

4.2.2.2 Classroom visits

Classroom visits is about classroom observations conducted by instructional leaders during the process of teaching and learning (Department of Basic Education, 2015). However, in South African schools, classroom observation is mainly done for Integrated Quality Management System (IQMS).

It emerged that the participants do classroom visits. However, the findings reflected different purposes of their visits, hence Mr Ntuli of Grace Secondary School said:

I visit mathematics classes during the periods using the class visit form provided by the DBE district officials. I also write some side notes that will assist me during one-on-one discussion with the particular teacher I have visited.

Miss Mhlongo of Shawbury High School added that:

The school has a tool designed by the School Management Team to make sure that all the classes are occupied. I use it as it helps to ensure that teaching and learning is in progress.

In the same vein, Mr Sokhulu of Vukuzakhe Secondary School shared his actions by saying:

I do class visit with an intention of observing and filling the gaps. So I use a template designed by the school. I conclude on my observations based on the interactions between the teacher and learners.

The above extracts suggest that the participants were aware of their management responsibilities with regards to class visitation. The participants highlighted how they conduct class visits and their

expectations. Mendel (2012) agrees with the practices of Mr Ntuli and Miss Mhlongo by saying that instructional leaders should spend time in classrooms evaluating instructional practices, considering strengths and weaknesses of teachers. Mendel (2012) also supports Mr Sokhulu's view that classroom visits assist teachers with areas of improvement and in building their confidence after the feedback and developmental session.

The classroom observations discussed by Mr Ntuli, Miss Mhlongo and Mr Sokhulu are in line with "democratic nature of support and development" of teachers as stipulated by Integrated Quality Management System (Collective Agreement, 2003, pp.50-51). According to this system, the educator selects a "development support group DSG and works in collaboration with the group (pp.28-29) from formulating the personal growth plan towards classroom observation (Collective Agreement, 2003, pp.33-35).

The classroom visitation presented by Mr Ntuli, Miss Mhlongo and Mr Sokhulu falls within the ambit of Far West Lab (1982) instructional leadership model. Mr Ntuli highlighted that he uses the form provided by DBE which reflects on Far West Lab's (1982) institutional context and its impact on school leadership. Miss Mhlongo also highlighted on the tool designed by the SMT in ensuring her visitation. However, according to Far West Lab's (1982) model, instructional organisation impacts positively on student outcomes. The template used by Mr Sokhulu was also designed by the school which also falls on instructional organisation of Far West Lab (1982) model.

4.2.2.3 Managing by walking around (MBWA)

Managing by walking around can be described as an effective management technique that can be used to enhance the teaching and learning process (Grissom, Loeb & Master, 2013). Mr Ntuli and Miss Mhlongo shared the same sentiments in emphasising the importance of MBWA. Mr Ntuli of Grace Secondary School said:

I use my free periods to move around mathematics classes during mathematics periods to ensure that the teaching and learning of mathematics is conducted according to the requirements.

Miss Mhlongo of Shawbury High School shared the same view. She said:

I believe in walking around as the key factor for monitoring. I also believe that walking around helps in the discipline of both teachers and learners

Findings from the interviews seem to suggest that the participating Heads of Departments used Management by Walking Around (MBWA) to enhance the supervision process. In order to perform this task, the departmental heads require free [non-teaching] periods that they could use to visit, supervise and evaluate educators in their classrooms. Hence, Mr Ntuli highlighted that with emphasis on awareness of the challenges experienced in classes and relevant teaching and learning regarding curriculum coverage.

Far West Lab (1982) model brings attention to the significance of school climate as it impacts positively towards student learning. For instance, Mr Ntuli highlighted that he uses his free periods to move around the school ensuring that all classes are occupied. Miss Mhlongo's belief that walking around assists in disciplining both teachers and learners also falls within the instructional organisation and the school climate of Far West Lab (1982) model in shaping the learning of students.

4.2.3 Curriculum implementation

Curriculum implementation refers to the application of policies to guide the process of teaching and learning. The Department of Education (2017) posit on the main duties of instructional leaders in ensuring relevant policies on curriculum, assessment for teachers and overseeing curriculum planning and implementation. The participants echoed the same sentiments that they ensure the implementation of CAPS curriculum in mathematics through the use of CAPS documents. For instance Mr Ntuli of Grace Secondary School said:

I make sure that all the policy guidelines are followed as per CAPS requirements.

Miss Mhlongo of Shawbury High School added:

I have CAPS documents for all grades, so I keep in line with DBE expectations so I can see where are my teachers in terms of teaching pace, so I know everything that is expected by CAPS.

Mr Sokhulu of Vukuzakhe Secondary School also shared the same sentiments by saying:

I follow the CAPS document that is already planned for us. I manage the programme by providing the necessary resources that are required by teachers in the classroom.

The findings seem to suggest that the participating Mathematics Heads of Departments conceptualised their roles as significant in implementing the curriculum and supporting teaching and learning. Miss Mhlongo and Mr Sokhulu shared the same sentiments that they use CAPS documents in following CAPS requirements. Similarly, Mr Ntuli's view emphasised on the use of policy guidelines, following all the CAPS requirements for proper implementation of the curriculum.

Far West Lab (1982) instructional leadership model emphasises on the institutional context as it provides a directive to the school leadership to implement policies and all other planned guidelines regarding student learning. This directly relates to District offices sending circulars and other relevant material to the schools. However, all participants highlighted that they use CAPS policies to implement the curriculum in place.

4.2.4 Monitoring student learning

Monitoring is about direct and indirect instructional activities performed by instructional leaders in supervising and evaluating the learner's progress. Katterfeld (2011, pp.28-29) posits that instructional leaders focus mainly on students' work, their level of performance and creating systems that will promote teacher accountability. It emerged from the participants that learner's work is done in different forms. The following statement from Mr Ntuli of Grace Secondary School confirms this view. He said:

I do random sampling of learner's exercises in all mathematics classes at any time particularly during my classroom visits. This assists me in maintaining the standard

of the requirements of the curriculum tool on the number and quality of activities given to learners.

Similarly, Miss Mhlongo of Shawbury High School said:

I take samples of learner's exercise books according to their performance. Those who perform well, the middle one and so on as I am guided by the mark lists. This helps me in assuring the performance of learners.

Mr Ntuli and Miss Mhlongo shared the same view regarding the monitoring of learner's work that they sample the learner's exercise books. Mr Ntuli and Miss Mhlongo shared the same view regarding the monitoring of learners work that they sample the learners' exercise books. Their view is corroborated by KwaZulu-Natal Department of Education (2016) that instructional leaders should sample a minimum of three exercise books per class for monitoring purposes. According to Katterfeld (2011, p.65), it is crucial for instructional leaders to monitor the learners progress in order to ensure the achievement of goals (Robinson, Lloyd & Rowe, 2008, 663). In contrast to the aforementioned participants, Mr Sokhulu of Vukuzakhe Secondary School displayed a different view of monitoring of student learning. This is what he said:

I make sure that learner's exercises are well marked by subject teachers. I also make sure that I have an encounter with the learners who don't do their work as reflected by their exercise books.

Student learning falls within the ambit of Far West Lab instructional management model (1982). This model states that the success of student learning originates from good instructional organisation and school climate created by school leaders. According to this model, Heads of Departments are required to ensure an organised and suitable environment that is conducive to student learning. However, literature supports the establishment of a positive school environment that it impacts positively towards the process of teaching and learning. In fact, the sentiments of the interviewed mathematics Heads of Department are in line with some scholars Leithwood, Harris and Hopkins (2008); Klar and Brewer (2013) who declare that a positive school climate is crucial for effectiveness of teaching and learning process.

4.2.5 Teacher development

Teacher development is based on the purposely planned improvement of teachers' knowledge, skills and practice (KZN Department of Education, 2016). Supovitz and Poglinco (2001) describe teacher development as the provision and development of teachers conducted with the aim of creating changes leading to improved learner achievement. According to Sullivan and Glanz (2005), teacher development is all about equipping teachers with different approaches to utilise in different situations.

It emerged from the responses of the participants that they encouraged professional development. This development takes the form of workshops and personal or self-development.

4.2.5.1 Professional Development Workshops

Workshops are well-known special sessions conducted for teachers to provide them with strategies and tactics for their instruction, classroom management and innovations (Du Plessis & Eberlein, 2018, p.3). DuFour (2004) also states that powerful professional development occurs when teachers are gathered together to improve their practices (Leithwood, 2016, P.4).

The participants emphasised important roles that workshops play in the development of teachers. Mr Ntuli of Grace Secondary School commented:

The school conducts professional developmental and departmental meetings fortnightly I make use of departmental meetings to guide, motivate and encourage mathematics teachers.

Miss Mhlongo of Shawbury High School provided an illustration on the workshops conducted by the Department of Education. This is what she said:

I believe that teachers must know everything about the department. I give them feedback for every workshop that is made by the department and I make follow-up on everything that is done.

Mr Sokhulu of Vukuzakhe Secondary School also said:

We have a strategy called crossing over in which we involve novice teachers with the old ones whereby they learn different strategies about teaching and learning. Skills and strategies are needed to implement what you are going to do with the learners. We also have teacher development of using expertise from within the school to help those who are newly appointed in the field.

The participants reflected on workshops done in their schools for the development of teachers. It is important that educators “keep abreast with the latest developments and innovations in the field of education (Supovitz & Poglinco, 2001, p.9) as this empowers both post level one teachers and departmental heads. However, Steyn (2008) also acknowledges the urgency for the teachers to keep updating themselves for the enhancement of their teaching strategies. The Department of Education also organises workshops for teacher development, however, Miss Mhlongo emphasized on the provision of feedback after attending DOE workshops. Hoque, Alam and Abdullah (2011) established a positive connection between teacher professional developmental activities and school improvement.

Far West Lab (1982) instructional management model indicates that school leaders should create an instructional organisation that is suitable for the learning climate. This clearly states that when teachers are professionally developed, they are able to maintain a proper instructional organisation using their strategies. However, in some instances the professional development is influenced by the institutional context which includes subject advisors’ workshops and other planned curriculum developmental procedures.

4.2.5.2 *Encouraging self-development*

Self -development is about equipping yourself with relevant information regarding your career. This view is supported by Mestry, Hendricks and Bisschoff (2009, pp.475-476). Development spans the career of an individual through the acquisition of skills and knowledge necessary for effective practices in their careers. The participating mathematics departmental heads emphasised the significance of teachers in developing themselves. Mr Ntuli of Grace Secondary School said:

I make use of our departmental meetings to encourage all mathematics teachers to enrol themselves with institutions of higher learning in order for them to be competent in their teaching activities.

Similar sentiments were echoed by Miss Mhlongo of Shawbury High School who stated that:

I always tell the teachers that education is continuously changing. They must study to improve themselves so that they can be able to adapt to the newly introduced innovations and all other curricular changes.

Mr Sokhulu of Vukuzakhe Secondary School expressed the same views as Mr Ntuli and Miss Mhlongo on this issue. However, he considered the importance of self-development to the advancement of knowledge and skills. This is what he said:

I discuss with the teachers about their qualifications and advise them on the need to study for the renewal of their knowledge and for the enhancement of their skills in the facilitation of teaching and learning process.

Crucially, Mr Ntuli, Miss Mhlongo and Mr Sokhulu shared the same view regarding self-development as they highlighted their encouragement of mathematics teachers to enrol with higher educational institutions. This finding is in accordance with the literature reviewed that the main duty of instructional leaders is to strive towards supporting teachers in improving their skills to enhance the teaching and learning process (Supovitz & Poglinco, 2011). Similarly, Steyn (2008) acknowledges the significance for teachers to continue to update their knowledge for upgraded curriculum instruction. However, Mr Ntuli's view of encouraging mathematics teachers in their departmental meetings is also supported by Msila and Mtshali (2011, p.3) that "when teachers are empowered in the reform of their schools, drastic changes develop".

From a theoretical perspective, Far West Lab instructional management model (1982) posits on personal characteristics of school leaders to reflect on school leadership. Improved personal characteristics impact positively on instructional leadership practices in order for them to ensure student learning and ultimately school improvement.

4.3 Why do the Heads of Department operationalise instructional leadership of mathematics in the way they do in rural secondary schools?

The Department of Education and Culture (2002, p.70-71) states that the key responsibility of the Heads of Departments is “to ensure that the subjects and the education of learners is conducted in a proper manner.” However, due to some contextual factors and challenges facing rural school, the Heads of Departments strategise their instructional leadership practices to suit the situation. Hoadley, *et al.* (2009, pp.3-4) also argue that contextual factors such as the “lack of parent involvement in the education of their children” and high rate of poverty have a negative impact on learning outcomes. The participating HODs clearly outlined positive responses to the existing situations of their individual school performance.

4.3.1 Departmental policies

Departmental policies are guiding documents or circulars cascading information to be followed by schools with regard to the teaching and learning process. These policies originate from the provincial office of the HOD and the national office of the Director General. Personnel Administrative Measures (2016) is one of the guiding policy documents that states the main responsibilities of the Heads of Departments as curriculum managers is to take charge of the subjects and be responsible to jointly develop the departmental policy (PAM, 2016, p.36). Two of the participants reflected that they are guided by the policies in their leadership practices. They mentioned policies from the Department, which is the Department of Education, and the school mathematics department. For example, Mr Ntuli of Grace Secondary School said:

I am guided by the policies from the Department of Education and there are also templates which help me to monitor every step of the way.

The same sentiments were shared by Miss Mhlongo of Shawbury High School by saying:

I make sure that all mathematics teachers follow mathematics CAPS policy documents according to the Grades that they are teaching.

Mr Sokhulu of Vukuzakhe Secondary School also shared his view regarding the use of departmental policies. He said:

We have a policy and a schedule of teachers file submission whereby we follow up and ensure their supervision and evaluation of their teaching during their lessons. I follow the Annual Teaching Plan (ATP) designed by the Department of Education for all grades.

The sentiments of the mathematics Heads of Departments are in line with what the literature is saying. Blandford and Gibson (2000, p.6) for instance, argue that in order for the Heads of Department “to understand the nature and duties of their job, policies should be in place”. The Department of Basic Education (2014) in line with other policies focuses mainly on the role of school leaders. There are numerous policies that have been implemented by DBE to create changes in the education sector. Mr Ntuli and Mr Sokhulu highlighted that they follow the policies and templates from the Department of Education. However, PAM (2016) document and Educators Employment Act (1998) in relation to curriculum management states that Heads of Department must ensure effective functioning in their departments through proper coordination. The toolkit for school management teams on curriculum provides guidelines for the development of a School Assessment Policy (KZN, DOE, 2017). Tranter (2000) on the other hand, emphasises that it is the duty of the Head of a subject lead all the implementation and the development of policies and practices in line with the teaching and learning policies

Far West Lab’s (1982) instructional leadership model contends that in order to improve the school’s situation, instructional leaders must follow the district goals and policies. Hence, Mr Ntuli and Mr Sokhulu indicated on procedures they follow in implementing the DOE policies. An institutional context in the Far West Lab (1982) model reflects a positive correlation with regards to its directive to the school leadership. However, the model indicates that proper implementation of policies by the school leaders leads to good learning climate, a well-planned instructional organisation and ultimately improved student outcomes.

To sum up this sub-theme, two of the participating mathematics Heads of Departments revealed that they use policies from the Department of Education. Their views are also supported by Jansen and Sayed (2001) with clear principles on policies based on accountability. The scholars state on the principles of practical intelligence which they name as the vehicle for policy implementation and the principle of working with scenarios, idealism and a streetwise practical mindedness. These principles are meant to project certain deeply held beliefs and values regarding the leadership

practices of the Heads of Department (Jansen & Sayed, 2001, p5). The implementation of policies assist individuals with the ability to exercise their duties and to participate fully in the social, economic, cultural and political life in the education sector (Jansen & Sayed, 2001, p7).

4.3.2 Instruction from the principal

Scholars such as Hallinger and Murphy (1985); Rhodes and Brundrett (2010) are of the view that instructional leaders develop the vision of the school which demands high performance of teachers and learners. However, the ultimate goal is to promote quality teaching and learning to improve learner outcomes (Hallinger & Murphy, 1985; Rhodes & Brundrett, 2010). *The South African Standard for Principalship* (DoBE, 2014) clearly describes the job description of school principals as providing direction in the area of leadership and management in order to ensure standardised teaching and learning. The participants indicated that they obey the instructions from their principals. Mr Ntuli of Grace Secondary School said:

Although I am the curriculum manager in the mathematics department, I always acknowledge all the guidelines and instructions from the principal.

Miss Mhlongo of Shawbury High School added:

I am following the instructions from the principal in managing the teachers in my department.

The same sentiments were also echoed by Mr Sokhulu of Vukuzakhe Secondary School. He said:

All the procedures and processes planned by the principal and other members of the School Management Team (SMT) are very important. I always make sure that I am directed by all these policies with all other intervening programmes assigned by the principal.

The above voices suggest that the selected participating mathematics departmental heads are obeying the instructions from their principals. However, Mr Sokhulu highlighted on the procedures they create as SMT members that he also follows together with the programmes of intervention by the principal. The South African Standard for Principalship (DoBE, 2014) posits that school

principals should be strategic in developing a good culture of learning that promotes greater learner performance.

4.3.3 Drawing on personal experiences as leaders of mathematics

Personal experience is about the occurrences previously encountered by individuals in their particular fields of work. Mr Ntuli of Grace Secondary School shared his experiences. He said:

When I started teaching mathematics, it was much better with the behaviour of learners. I used to face few challenges of learners who were not cooperating which were only boys. As a leader in mathematics I have been dealing with cases of learners who are misbehaving in mathematics classes meanwhile the novice teachers are failing to discipline them particularly in this school.

Miss Mhlongo of Shawbury High School also shared her personal experiences being the Mathematics teacher and as a leader. She said:

I was young when I was appointed as a mathematics teacher. I was very courageous and energetic regardless of any obstacles I was facing. Learners were taking advantage of me as a female teacher of mathematics but I had to grow the hard way. I also encountered similar challenges even in my leadership position, hence, I make sure that I set my records straight in dealing with mathematics issues and the individual mathematics teachers.

Similar views were shared by Mr Sokhulu of Vukuzakhe Secondary School who said:

As a mathematics teacher, I was able to be accountable for my doings with regards to the subject teaching and learner performance. The accountability I am facing as mathematics leader is now frustrating considering the workload and all other matters encompassed.

Literature suggests that personal experience is an important component in acquiring new skills, managing life stressors and in forming and sustaining close relationships (Celik, 2015). Celik (2015, p.110) maintains that personal experiences influences academic and personal skill

development, career development, academic achievement, development of efficacy feeling, communication skill development and establishing bilateral relationships.

4.3.4 Modelling best practices as leaders

Modelling the practices is based on what mathematics departmental heads are doing best to ensure that their subordinates are copying a good pattern. KwaZulu-Natal Department of Education (2015) requires the instructional leaders to be influential whilst directing and supporting the process of teaching and learning. The findings that emerged were that the selected mathematics departmental heads are modelling best practices with regards to classroom attendance, professional behaviour and other curriculum matters. As such, Mr Ntuli of Grace Secondary School asserts himself in respect of punctuality and school attendance that he modelled best practices of professional behaviour. Miss Mhlongo of Shawbury High School also mentioned that:

I must lead by example in whatever aspect: in terms of classroom attendance and instruction, dress, punctuality, ensuring that my work is done timeously, and ensuring high quality standard in my work ... so that others can adopt my styles and my practices.

In a similar vein, Mr Sokhulu of Vukuzakhe Secondary School also clarified about his involvement in classroom practices. He said:

Departmental head is also a teacher, but must be the teacher that others could look up to and model their practice. I make sure that I am able to reflect to my teachers referring from my classroom activities by being exemplary showing them how I have done and what my expectations are.

All the participants showed a great understanding and the significance of modelling good practices in their departmental teachers. However, Mr Ntuli's focus was on the professional behaviour that he performs in order for his teachers to follow the good practices. Mr Ntuli's focal point is consistent with the view held by Southworth (2002) that for the staff to emulate best practices, school leaders should model the correct professional behaviour and teaching practices. Miss Mhlongo and Mr Sokhulu shared the same view of ensuring that they enact on the practices in a

manner that will promote their departmental teachers to adopt their styles. The two participants also reflected on classroom practices that should be adopted by their teachers from them. Miss Mhlongo and Mr Sokhulu's view is supported by Hallinger and Murphy (1985) that quality teaching and learning in the classroom indicates good instructional practices.

Drawing on Far West Lab's (1982) model of instructional leadership, school leaders are modelling best practices when they are able to organise their instructional leadership practices and develop the school climate. According to this model, modelling of best instructional leadership practices promote better student outcomes.

4.4 How can the instructional leadership practices enacted by the mathematics Heads of Departments in rural secondary schools be transformed to ensure better learner outcomes?

Sergiovanni (2006) is of the view that transformational leadership influences, transforms and build followers into leaders. The scholar also maintained that schools are transformed into learning organisations through the sharing of visions, values and other mental models of school development Sergiovanni (2006). Leithwood, Harris and Hopkins (2008) posit that transformational leadership is based on influence and it yields its success when school leaders are prepared to implement it effectively.

4.4.1 Drawing on teamwork

Teamwork is about working together as staff. According to Harries and Jones (2010), teamwork is based on the engagement of teachers in collaborative work and targeting common objectives. The findings that emerged were that the selected mathematics departmental heads promote teamwork to be one of the great strategies to be used in improving the school performance. In this regard, Mr Ntuli of Grace Secondary School stated that:

I have got more than two mathematics teachers, so I encourage them to work as a team. At the same time I always encourage them to do networking because networking is powerful. We have got teachers around our schools who are good in

mathematics, so I always encourage them to invite them, if it means digging from the pocket of the governing body, we do that to fetch those teachers especially the lead teachers.

A similar response came from Mr Sokhulu of Vukuzakhe Secondary School who said:

As a school we work as a team, as a club, so we assist one another whenever there is need to do so. So, this is how we do it in our school. As mathematics teachers we sit down and plan how we are going to do, check where the others have strengths and where the others have weaknesses so we can work easy. We plan at an early age.

The above extracts suggest that the participants recognise the importance of teamwork in the teaching process. This importance is supported by Clark's (2007) view that teamwork provides some beneficial effects that develop when teachers and learners work together in their individual teams. Mr Ntuli's practice of encouraging teachers to work as a team is maintained by Steyn and van Niekerk (2002) who posit that teamwork amongst teachers is the best weapon to fight their uncertainties. Bush (2003) also advocates that collegiality promotes good working relationship and success in teamwork. The working relationship stated by Bush (2003) are also supported by Morgan and Harries (2012) that through collegiality, communication and mutuality is promoted. The benefits of teamwork highlighted by Clarke (2007) corroborates Mr Sokhulu's views that as they work in teams, they share their individual strengths and weaknesses. However, Clarke (2007) contends that the teams are able to work effectively and succeed when effectively led and managed. It is also significant that in order for teams to be successful their actions should be guided by a shared vision (Moloi, 2007).

Far West Lab's (1982) instructional leadership model emphasises on the learning climate to be created by the instructional management leaders. However, the success of this learning climate lies within collegiality. In other words, for the environment to be totally conducive to student learning, all the people working in the environment should be working in collaboration with one another.

4.4.2 Getting assistance from subject advisors

Assistance from subject advisors refers to the help and relevant guidance they provide related to the specific subject. The Department of Education describe subject advisors as subject specialist

or coordinators designated to provide support to subject teachers (DBE, 2010). This is what Mr Ntuli of Grace Secondary School said:

I use advisors as backbones in helping the teachers in my department to make sure that our learners are getting prepared for their final examinations.

Miss Mhlongo of Shawbury High School mentioned that:

When facing challenges, I report to the principal and the principal takes the matter further to the subject advisors or gives me a go ahead to contact the subject advisor concerned.

Mr Sokhulu of Vukuzakhe Secondary School added:

I make sure that all mathematics teachers attend workshops conducted by subject advisors and that I receive the feedback.

The above extracts suggest that they are engaging subject advisors in promoting the standard of teaching amongst mathematics teachers in their schools. Mr Ntuli highlighted that he uses subject advisors as backbones of assistance in his mathematics department. Furthermore, Miss Mhlongo illuminated that he considers the assistance of subject advisors via the principals when encountering challenges regarding the subject. The views of the participants are substantiated by Robinson, Lloyd and Rowe (2008, p.638) that instructional leaders should “strategise instructional leadership practices” that could enhance learner performance. These scholars also emphasise that effective instructional leaders should always analyse, evaluate and discuss curriculum instruction with the educators, approve and provide feedback that will assist them to improve classroom instruction.

Far West Lab (1982) instructional management model reflects on institutional context which include the availability of subject advisors and other district officials. The institutional context impact directly on school leader’s instructional management for the purpose of learner outcomes. However, this model also emphasises that institutional context have “an influence on the role and behaviour of school leaders’ management practices” (Bossert *et al.* 1982, pp.4-5) as they comply with policy changes to impact on student outcomes.

4.4.3 Drawing on parental support

Parent support refers to parent involvement in all the school procedures and functional activities. Fullan (2001) states that involvement of stakeholders in schools assist in the development of the learning organisation. In support of the foregoing, Mr Ntuli of Grace Secondary School echoed that:

We invite parents at the beginning of each term to observe the performance of their children during the previous term. I make sure that parents are aware of mathematics promotion requirements in all grades.

The significance of parent involvement in the school affairs regarding learner performance in mathematics was also underscored by Miss Mhlongo of Shawbury High School. She said:

When I monitor learners' work, I select the names of learners who are poorly performing and those recognised by mathematics teachers as troublesome during the lessons. It is my responsibility to make the parent aware of the situation and the possible results.

Mr Sokhulu Vukuzakhe Secondary School highlighted on the issue of absconding mathematics classes. He said:

I invite parents of learners who bunk mathematics classes due to their attitude towards the subject to discuss the matters including the impact of the learner's behaviour towards mathematics performance.

The above discussions of the participating mathematics Heads of Departments showed different cases that requires parent support. For instance, Mr Ntuli and Miss Mhlongo stated that they involve parents on learner's performance and alert them on expectations regarding promotion to the next grades. Their views are propounded by Kemper (2008) who assert on school leaders to aim on improving learner's performance through the creation of a pleasant environment for the participation of parents in all the school activities.

Mr Sokhulu's view was on the challenge that mathematics teachers encounter as learners abscond mathematics periods. He highlighted that they discuss the matter with parents to alert them on every implications. Robinson, Lloyd and Rowe (2008) are of the view that instructional leaders

should discuss learner's work with other stakeholders, analyse results and strategise to improve their performance. These scholars state that effective instructional leaders analyse and evaluate all the activities with teachers and parents to enable teachers to improve their practices. Pansiri (2008) contends that parents' negativity, poor communication between parents and school management teams create challenges and impact negatively on school performance. However, the relationship between parents and the school is crucial to improve learner achievement outcomes (Hoadley, *et al.*, 2009).

Far West Lab instructional leadership model draws attention to the "school leaders to respond to the needs of different communities" (Bossert *et al.*, 1982, p.6). However, this model shows that if the school leaders consider a positive impact of the community context in their instructional management, there will be a positive correlation in creating a good instructional organisation with improved student outcomes.

4.5 Conclusion

In this chapter, findings from the participants were discussed. The data that was generated was presented and analysed using different themes and sub themes that emerged during the interview process. The proceeding chapter is the final chapter of this study which presents the main findings and analysis of the findings. Recommendations are made based on the findings that emerged. A number of conclusions regarding the findings are drawn. The chapter is brought to a close by a conclusion.

CHAPTER FIVE

SUMMARY OF THE STUDY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the study, conclusions from the findings presented in the previous chapter and recommendations emanating from the study. The previous chapter discussed and presented the findings from the participants. The findings were presented in themes and sub-themes that emerged during the interview process.

The main research questions were as follows:

- What are the instructional leadership practices of Heads of Department with regard to mathematics in rural secondary schools?
- Why do the Heads of Department operationalize instructional leadership of mathematics in the way they do in rural secondary schools?
- How can the instructional leadership practices enacted by the mathematics Heads of Departments in rural secondary schools be transformed to ensure better learner outcomes?

This Chapter is presented in the following format. I commence by providing a brief summary, followed by conclusions guided by each research question and then the recommendations.

5.2 Summary of the study

The focus of the study was to explore the instructional leadership practices of mathematics Heads of Departments.

Chapter One supplies a broad review and background of the study regarding the underperformance of many learners in mathematics. The poor performance has been observed for three consecutive years in iLembe District as it consistently came last with Mathematics results in the National Senior Certificate examination results in KwaZulu-Natal. This study focuses on examining the instructional leadership practices enacted by mathematics Heads of Departments in rural secondary schools. The purpose of the study is why they use the instructional leadership

practices they use as individuals. The poor performance of learners in rural secondary schools particularly in mathematics motivates this study. The significance, aims and objectives and the key research questions that guide this study are provided followed by the definition of key terms such as leadership, management and instructional leadership used in this study. An outline resulted to the ending of this chapter.

Chapter Two is based on the literature reviewed in consideration of the key research questions. The review focused on the details of leadership, management, instructional leadership, Heads of Departments as instructional leaders and challenges facing mathematics Heads of Departments. A report on instructional leadership theory that incorporated Bossert, Dwyer, Rowan and Lee (1982)'s Far West Lab instructional management model. A literature that is closely connected to instructional leadership practices was used for support. This chapter also presented some literature related to the study regarding instructional leadership and mathematics in on international and African context. The studies conducted in an international context regarding instructional leadership reflected on strategies modelled to enhance the efficacy of teaching and learning. The strategies include the use of pedagogical practices, monitoring, development of staff, and redesigning the organisation. However, in an African context, studies highlighted some concerns that impact negatively on learner performance, namely: incompetency of the Heads of Departments, inability to play their supervisory roles and lack of required skills. International studies on mathematics showed a trend in the relationship between learner performance and teacher involvement. African studies reflected that South Africa is the worst poor performing country with regard to mathematics learner's results.

Chapter Three: The chapter engages with the research design and methodology. A description on the research paradigm including discussions of ontology, epistemology and methodology is provided. The study used an interpretive paradigm which deals with socially constructed multiple realities. This paradigm could assist in the understanding of the reality of the existing situation, thus HODs instructional leadership practices. This is then pursued by the detailed explanation of the theory based on the methodological approach of the study. Case study was used as a methodology in this study. The instructional leadership practices of mathematics Heads of departments are a case in this study. Hence, real people in a real situation provide a unique example of a case. Semi structured interviews were methods used to generate data. Purposeful sampling

was used to select the participating HODs considering their knowledge and experience about their instructional leadership in mathematics. The acquired data was condensed and organised in an understandable form. The data of all recorded interviews was listened to repeatedly after each other and transcribed to facilitate analysis. A report on ethical issues and limitations of the study brought the chapter to a close.

Chapter Four provides an analysis of data, findings and the discussion of data produced during the interviews. The information transpired from the interviews is then considered beneath the themes and sub themes. In revealing the information, verbatim quotations were used to reveal data and make sure that the information collected from the participants does not disappear. In research question number one, the participants reflected on the significance of sharing the vision. Findings from the second research question showed that the HODs are guided by the Department of Education policies in managing their departments. These findings also reflect on the involvement of the principal in the instruction of mathematics and how these HODs reflect on their individual experiences as leaders of mathematics. The findings also show how these mathematics HODs are exemplary to their teachers in modelling the best practices. Research question number three reflected on the findings of how the HODs encourage teamwork of mathematics teachers. The findings also reflected on the significance of subject advisors in the teaching of mathematics and how they involve them in their schools. It was also find out that they involve parents for the purpose of improving learner outcomes.

5.3 Conclusions

Maree (2011, p.113) describe the significance of analysing the findings and the interpretation of data by researchers as “bounded conclusion”. Conclusions are drawn to finalise judgement against the existing knowledge and the findings generated by the study (Maree, 2011).

5.3.1 What are the instructional leadership practices of heads of department with regard to mathematics in rural secondary schools?

A significant conclusion that was gleaned from this research question was that the participating HODs are visionary instructional leaders who believe that sharing a vision amongst subordinates is best. The supervision styles used in checking teacher’s lesson preparations, visiting classrooms

and managing by walking around (MBWA) is also encouraged as keys of supervision techniques. It is also believed that curriculum should be implemented according to the DOE expectations in order to ensure that requirements are met. Crucially, monitoring of student learning is considered to be the main contributing factor towards learner achievement. It is also believed that teacher development is significant, hence, teachers need to attend professional development workshops. They must also be encouraged to undertake self-development.

5.3.2 Why do the Heads of Department operationalise instructional leadership of mathematics in the way they do in rural secondary schools?

It has been revealed that when departmental policies are followed and used effectively, the school runs smoothly with probability of great learner outcomes. The instruction from the principal directs the functioning of the school. Hence, when the principal is a good curriculum instructor, learner performance is improved. It is believed that a leader's personal character can build or destroy. However, the experiences acquired by mathematics teachers are useful in a long run considering dealing with curriculum changes and teachers' behavioural patterns. It is also believed that modelling best practices encourages good practices among teachers and promotes dedication.

5.3.3 How can the instructional leadership practices enacted by the mathematics Heads of Departments in rural secondary schools be transformed to ensure better learner outcomes?

A significant conclusion regarding the third research question was that collegiality amongst mathematics teachers allows unity, togetherness and promoted good mathematical problem solving skills. It is also believed that teamwork encourages good working relations and positive attitudes which also promote learner performance. The acknowledgement of subject advisors as subject specialists is considered important in ensuring that teachers are updated with curriculum matter regarding the subject. It was concluded that parents form the third leg of the school context regarding student learning. Hence, it is crucial for them to be part of the learning process.

5.4 Recommendations

Recommendations were suggested based on the conclusions that were drawn from the findings of the study.

Recommendation One

The findings from the participating mathematics Heads of Departments showed that “vision and goals for the teaching and learning of mathematics should be shared” (Katterfeld, 2011, pp.7-8). The main emphasis was on the vision and goals of their departments in their individual schools. To a large extent they stated that they ensure that their vision and goals are in line with CAPS requirements. It is therefore recommended that mathematics Heads of Departments as curriculum leaders should “create and share a compelling vision that will inspire and motivate” (Leithwood, 2016, pp. 120-121) other members of the staff. This is in line with the purpose of attaining goals stated by Winter (2004) that should be created by instructional leaders.

Recommendation Two

One of the significant findings of this study was on the supervision of teachers’ work. This entailed checking of teacher’s lesson preparation, classroom visits and managing by walking around (MBWA). It is therefore recommended that Heads of Departments supervise teacher’s work in a manner that will improve learner achievement.

Recommendation Three

A significant finding was that the participating mathematics Heads of Departments effectively managed and supported teaching and learning in their individual schools. The recommendation is that mathematics HODs should operationalise their instructional leadership practices in ways that will promote learner performance. It is also recommended that their support should improve teacher’s instruction and learner outcomes. Hence, this study aimed to explore the instructional leadership practices of Heads of Department regarding mathematics.

Recommendation Four

It has been found out that the selected HODs do conduct professional development of teachers in their individual schools and provide support to DOE workshops. The findings also reflected that they encourage personal development to the mathematics teachers for the enhancement of their

knowledge. However, it is recommended that teacher development creates a positive learning climate. It is also recommended that well developed teachers are willing, motivated and their practices impact positively towards student learning. It is also recommended that all schools should have a strategically planned programme of professional development for teachers particularly the novice teachers.

Recommendation Five

The findings that emerged regarding policies was that the participating mathematics HODs uses Personnel Administrative Measures (PAM, 2016) as one of the guiding policy documents that states the main responsibilities of the Heads of Department. This finding is recommended since PAM (2016) document guides curriculum managers in taking charge of the subjects and in the development of their departmental policies in their individual schools. They also ensured that they follow instructions from the principal. It is always recommended that principals as instructional leaders are expected to direct curriculum instruction. The findings drawn on their personal experiences reflected some challenges they encountered with mathematics learners. The recommendation is that individual experiences are significant in changing the situation and consequently learner performance. It has also been found out that the participants model good practices to the teachers. However, it is recommended that the HODs should lead by example and demonstrate when required in order for the teachers to follow.

Recommendation Six

A significant finding was that the participating mathematics Heads of Departments encourage teachers in their departments to work as teams. The recommendation regarding teamwork is that the individual strengths and weaknesses are attended to. Teamwork also creates good working relations amongst teachers. The findings regarding the assistance of subject advisors was that mathematics Heads of Department consider the subject advisors as coordinators and backbones of the subject. The recommendation is that it is crucial to consult the subject advisors for assistance and guidance as specialists in the subject. The findings also reflected that mathematics HODs do request parents to deliberate on learners' performance and progress. It is recommended that parents should always play a significant role in their children's schooling activities. Parent's availability promotes good behaviour and dedication of learners towards their school work.

5.5 Conclusion

This chapter outlined the summary of the entire research study. Conclusions were drawn from the findings informed by the research questions. The conclusions elicited corresponding recommendations. The chapter was brought to a close by a conclusion.

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LIST OF APPENDICES

APPENDIX A: Letter to DoE requesting permission to conduct research in KZN schools

Lot 3068
42 Soccer road
Waterloo
VERULAM
4340
12 March 2018

Attention: The Superintendent-General (Dr EV Nzama)
Department of Education
Province of KwaZulu-Natal
Private Bag X9137
Pietermaritzburg
3201

Dear Sir

REQUEST FOR PERMISSION TO CONDUCT RESEARCH

My name is **Ntombizandile Nodada**, a Masters student in the School of Education at the University of KwaZulu-Natal (Edgewood Campus). As part of my degree fulfilment, I am required to conduct research. I therefore kindly seek permission to conduct research in three schools under your jurisdiction in ILembe District. The title of my study is: **A case study of the instructional leadership practices of mathematics heads of departments in rural secondary schools**. This study focuses on examining the impact of instructional leadership practices of the mathematics heads of departments in the achievement of mathematics by learners in education, particularly in schools.

The planned study will focus on three selected schools in ILembe District. The study will use semi-structured interviews to interview the departmental heads. Participants will be contacted well in advance for interviews, and they will be purposively selected to participate in this study. Participants will be interviewed for approximately 45-60 minutes at the times convenient to them

which will not disturb teaching and learning. Each interview will be voice-recorded. Responses will be treated with confidentiality and pseudonyms will be used instead of the actual names. Participation will always remain voluntary which means that participants may withdraw from the study for any reason, anytime if they so wish without incurring any penalties.

You may contact my supervisors, UKZN Research Office or me should you have any queries or questions:

Supervisor:

Prof. Inba Naicker
Tel. 031 260 3461 (office)
E-mail:Naicker1@ukzn.ac.za

UKZN Research Office

HSSREC-Ethics
Tel: 0312608350

My contact number:

Cell: 072 415 4853
E-mail: zandilenodada@gmail.com

Your positive response in this regard will be highly appreciated.

Thanking you in advance

Yours sincerely
N. Nodada (Mrs)

PERMISSION LETTER FROM KZN DOE



education

Department:
Education
PROVINCE OF KWAZULU-NATAL

Enquiries: Phindile Dume

Tel: 033 392 1000

Ref:2/402/1785

Mrs N Nodada
42 Soccer Road
Venster
4340

Dear Mrs Nodada

PERMISSION TO CONDUCT RESEARCH IN THE KZN DOE INSTITUTIONS

Your application to conduct research entitled: "A CASE STUDY OF THE INSTRUCTIONAL LEADERSHIP PRACTICES OF MATHEMATICS HEADS OF DEPARTMENTS IN RURAL SECONDARY SCHOOLS", in the KwaZulu-Natal Department of Education Institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from 05 May 2019 to 04 January 2021.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Miss Phindile Dume at the contact numbers below.
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report/dissertation thesis must be submitted to the research office of the Department. Please address it to The Office of the HOD, Private Bag 302137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to schools and institutions in KwaZulu-Natal Department of Education.

Lembe District


Dr. EV Mzama
Head of Department: Education
Date: 10 May 2019

KWAZULU-NATAL DEPARTMENT OF EDUCATION

Postal Address: Private Bag X9137 - Pietermaritzburg - 3200 - Republic of South Africa

Physical Address: 367 Burger Street - Orion/Lembe Building - Pietermaritzburg - 3201

Tel.: +27 03 392 1000 - Fax: +27 033 392 1203 - Email: Phindile.Dume@kzn.gov.za - Web: www.kzneducation.gov.za

Facebook: KZNDOE...Twitter: @KZNDOE...Instagram: kzn_education...Youtube: kzn DOE

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APPENDIX B: ETHICAL CLEARANCE

 **UNIVERSITY OF
KWAZULU-NATAL**
**INYUVESI
YAKWAZULU-NATALI**

23 May 2018

Mrs Ntombizandile Nodada (217078721)
School of Education
Edgewood Campus

Dear Mrs Nodada,

Protocol reference number: HSS/0448/018M
Project Title: A case study of the Instructional Leadership practices of Mathematics heads of departments in rural secondary schools

Approval Notification – Expedited Application
In response to your application received 14 May 2018, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol (i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods) must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully


Dr Shamila Naidoo (Deputy Chair)

/ms

Cc Supervisor: Dr Inba Naidoo
Cc Academic Leader Research: Dr SB Rhema
Cc School Administration: Ms Tyron Rhumalo

Humanities & Social Sciences Research Ethics Committee
Professor Shereen Singh (Chair)
Westville Campus, Genovese World Building
Postal Address: Private Bag 50401, Durban 4001

Telephone: +27 (0) 31 260 2081/2082/2083 Fax: +27 (0) 31 260 4018 Email: ethics@ukzn.ac.za | shereen@ukzn.ac.za | tyron@ukzn.ac.za
Website: www.ukzn.ac.za

 1915-2015
100 YEARS OF ACADEMIC EXCELLENCE

Forming Colleges:  Edgewood  Howard College  Medical School  Pietermaritzburg  Westville

APPENDIX C: Letter requesting permission from the principals to conduct research in schools

Lot 3068
42 Soccer road
Waterloo
VERULAM
4340
12 March 2018

The Principal
.....High School
ILembe District

Dear Sir/Madam

REQUEST FOR PERMISSION TO CONDUCT RESEARCH

My name is Ntombizandile Nodada, a Masters student at the University of KwaZulu-Natal (Edgewood Campus). As part of my degree fulfilment, I am required to conduct research. I therefore kindly seek permission to conduct this research at your school. The title of my study is: **A case study of the instructional leadership practices of mathematics heads of departments in rural secondary schools**. This study focuses on examining the impact of instructional leadership practices of the mathematics heads of departments in the achievement of mathematics by learners in education, particularly in schools.

The planned study will focus on three selected schools in Ilembe District. The study will use semi-structured interviews to interview the departmental heads. Participants will be contacted well in advance for interviews, and they will be purposively selected to participate in this study. Participants will be interviewed for approximately 45-60 minutes at the times convenient to them which will not disturb teaching and learning. Each interview will be voice-recorded. Responses will be treated with confidentiality and pseudonyms will be used instead of the actual names. Participation will always remain voluntary which means that participants may withdraw from the study for any reason, anytime if they so wish without incurring any penalties.

PLEASE TAKE NOTE THAT:

- There will be no financial benefits that participants may accrue as a result of their participation in this research project.
- Your identity will not be divulged under any circumstance/s, during and after the reporting process.
- All the responses and reviewed documents will be treated with strict confidentiality.
- Pseudonyms will be used to represent the school and names of the participants.
- Participation will always remain voluntary which means that participants may withdraw from the study for any reason, anytime if they so wish without incurring any penalties.
- Participants will be purposively selected to participate in this study and they will be contacted well in advance for interviews.
- The interviews shall be voice-recorded to assist me in concentrating on the actual interviews.

You may contact my supervisor, UKZN Research Office or me should you have any queries or questions:

Supervisor:

Dr Inba Naicker

Tel. 031 260 3461 (office)

E-mail: Naicker1@ukzn.ac.za

UKZN Research Office

HSSREC-Ethics

Tel: 0312608350

My contact number:

Cell: 072 415 4853

E-mail: zandilenodada@gmail.com

Your positive response in this regard will be highly appreciated.

Thanking you in advance

Yours faithfully
N. Nodada (Mrs)



Address:
Contact Number:

Email:

SECONDARY SCHOOL

Our Vision

To produce learners who will compete successfully in the world of training and field work



Re: Confirmation letter for Ntombizandile Nodada to conduct a research at
Secondary School.

If you put your heart mind and soul into even the smallest act, that translates into a success, and we need people who dare to put themselves into a state of total determination for global change to unfold.

The above-mentioned school gladly welcome your initiative.

Looking forward to hear from you.

Kind regards
Principal

(.....).....



HIGH SCHOOL



DEPARTMENT

PO BOX



PERMISSION TO CONDUCT RESEARCH

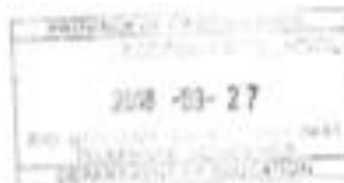
This serves to confirm that Ntombizandile Nudada your Masters student is granted a permission to conduct research at the above mentioned school.

The School Management Team also allowed the participant to partake in the research and interview which will be conducted by the student since it is clearly stated that it will not disturb teaching and learning.

Thanking you in anticipation,

SIGNATURE

(The Principal)





PERMISSION TO CONDUCT RESEARCH

Management of the above-mentioned institution acknowledges a request forwarded by Ntombizandile Nodada, a university student at UKZN Edgewood Campus, to conduct research on a master's programme.

Considering factors like professional growth on personal capacity, contribution towards the upliftment of education standards in our society and subject improvement, the school has decided to grant permission to Ntombizandile Nodada to conduct her research.

The school reserves the right to terminate permission if terms and conditions, as stated in the letter of request, are not observed and followed by the researcher.

Thank you

(Principal)

Contact Number:

Duly Signed

APPENDIX D: Letter requesting the Heads of Department to participate in the research

Lot 3068
42 Soccer road
Waterloo
VERULAM
4340
12 March 2018

The Mathematics Departmental head
.....School
Ilembe District

Dear Sir/Madam

REQUEST FOR PERMISSION TO PARTICIPATE IN A RESEARCH

I am currently a Masters student in Education Leadership, Management and Policy at the University of KwaZulu-Natal, Edgewood campus. I am presently engaged in a research study which aims to examine the instructional practices of the mathematics heads of departments. The topic of my research is: **A case study of the instructional leadership practices of mathematics heads of departments in rural secondary schools.** I would very much like to conduct the study in your school because I believe that you can provide valuable insight in extending the boundaries of our knowledge on this concept.

Your identity in this study will be protected in accordance with the code of ethics as stipulated by the University of KwaZulu-Natal. I undertake to uphold your autonomy as the participant. You will be free to withdraw from the research at any time without negative or undesirable consequences to yourself. However, you will be asked to complete a consent form. In your interest, feedback will be given to you during and at the end of the study.

PLEASE TAKE NOTE THAT:

- There will be no financial benefits that participants may accrue as a result of their participation in this research project.
- Your identity will not be divulged under any circumstance/s, during and after the reporting process.

- All the responses and reviewed documents will be treated with strict confidentiality.
- Pseudonyms will be used to represent the school and names of the participants.
- Participation will always remain voluntary which means that participants may withdraw from the study for any reason, anytime if they so wish without incurring any penalties.
- Participants purposively selected to participate in this study and they will be contacted well in advance for interviews.
- The interviews shall be voice-recorded to assist me in concentrating on the actual interviews.

You may contact my supervisor, UKZN Research Office or me should you have any queries or questions:

Supervisor:

Dr Inba Naicker

Tel. 031 260 3461 (office)

E-mail: Naicker1@ukzn.ac.za

UKZN Research Office

HSSREC-Ethics

Tel: 0312608350

My contact number:

Cell: 072 415 4853

E-mail: zandilenodada@gmail.com

Thanking you in anticipation.

Yours faithfully

Ntombizandile Nodada

APPENDIX E: Declaration by school principal

Declaration

I..... (Full names of the principal) of ----- (School name) hereby confirm that I have been informed about the nature, purpose and procedures for the study: **A case study of the instructional leadership practices of mathematics heads of departments in rural secondary schools.** I have received, read and understood the written information about the study. I understand everything that has been explained to me and I consent voluntarily for the school to be part of the study. I understand that the school is at liberty to withdraw from research at any time should the school so desire.

I agree/ do not agree for the use of audio recording device.

Signature of Principal

Date

.....

.....

School stamp

Thanking you in advance

Ntombizandile Nodada

APPENDIX F: Declaration by Head of Department

Declaration

I..... (Full names of participant) hereby confirm that I have been informed about the nature, purpose and procedures for the study: **A case study of the instructional leadership practices of mathematics Heads of Departments in rural secondary schools.** I have received, read and understood the written information about the study. I understand everything that has been explained to me and I consent voluntarily to take part in the study. I understand that I am at liberty to withdraw from research at any time should I so desire.

I **agree/ do not agree** for the use of audio recording device.

Signature of mathematics Head of Department

Date

.....

.....

Thanking you in advance

Ntombizandile Nodada

APPENDIX G: Semi – Structured Interviews: Interview guide for the participants

[The following questions will guide the interviews with the participants. There will be probes and follow-up questions. Some probes and follow-up questions are subject to the responses of the participants and some are reflected in the guide. This guide also comprises of research questions each followed by three interview questions].

Research Question 1: What are the instructional leadership practices of heads of department with regard to mathematics in rural secondary schools?

Interview questions:

1. In terms of your leadership of the subject mathematics at the school, what is your vision and goals for the teaching and learning of mathematics?
2. Tell me what do you do as head of department with regard to the following:
 - 2.1 supervising and evaluating teaching
 - 2.2 ensuring implementation of the CAPS curriculum in mathematics
 - 2.3 monitoring student learning
3. What do you do to develop teachers in your department? How do you do this? Do you feel it is successful?

Research Question 2: Why do the heads of department operationalize instructional leadership of mathematics in the way they do in rural secondary schools?

Interview questions:

4. What guides you in terms of how you monitor teaching and learning of Mathematics?
5. When you supervise teachers work why do you do it in that particular way?
6. What informs the way you conduct professional development for teachers in your department? Why?

Research Question 3: How can the instructional leadership practices enacted by the mathematics heads of department in rural secondary schools be transformed to ensure better learner outcomes?

Interview questions:

7. How can you draw on the following to assist you in your leadership of teaching and learning of mathematics?
 - 7.1 Institutional context (subject advisor....)
 - 7.2 Community context (.....)
8. What can you do differently as leader of teaching and learning of the mathematics department to improve learner performance?

General Interview Question

9. Is there anything you like to add regarding your leadership of the teaching and learning of mathematics at the school?

APPENDIX H: TURNITIN REPORT

Turnitin Originality Report

by **Wafiq Zaidi**

Print Thesis (PDF Thesis)

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APPENDIX I: LANGUAGE EDITOR'S CERTIFICATE

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Dr Saths Govender

1 JUNE 2019

TO WHOM IT MAY CONCERN

LANGUAGE CLEARANCE CERTIFICATE

This serves to inform that I have read the final version of the dissertation titled:

**A CASE STUDY OF THE INSTRUCTIONAL LEADERSHIP PRACTICES OF
MATHEMATICS HEADS OF DEPARTMENT IN RURAL SECONDARY SCHOOLS,**

by N. Nodada, student no. 217078721.

To the best of my knowledge, all the proposed amendments have been effected and the work is free of spelling and grammatical errors. I am of the view that the quality of language used meets generally accepted academic standards.

Yours faithfully

S. Govender

DR S. GOVENDER

B Paed. (Arts), B.A. (Hons), B Ed.

Cambridge Certificate for English Medium Teachers

MPA, D Admin.